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INTRODUCTION.

A WORD may be necessary in regard to the origin and progress of this work. It had its origin in an invitation given, in 1844, by John A. Lowell, Esq., Trustee of the Lowell Institute, in Boston, Mass., to deliver three or more courses of Lectures on the subject of Natural Religion.

Occupying at that time the Chair of Moral Philosophy in Union College, New York, the author accepted the invitation, as affording congenial employment, and the first course of twelve lectures was prepared and delivered early in the year 1845. Unexpectedly he was called, a few months later, to the Diocese of Pennsylvania, under circumstances which seemed to require his acceptance. In endeavoring to complete his engagement with the Lowell Institute, he was compelled, by the pressure of his new duties, to deliver the remaining lectures without previously writing them out, and to trust to his recollection, aided by newspaper reports, for the sketches, more or less full, which he generally made soon after the lectures were pronounced. Preparing the matter from day to day as it was delivered, the author modified to some extent the plan with which he started; and, in writing out subsequently, he naturally varied in the particularity with which he performed that part of his work. These facts are

mentioned merely to explain the fragmentary appearance of some, especially of the later chapters, and the want of entire symmetry in the proportions of the different books.

It should be added that these lectures were preceded by three courses on the same subject, before the same institution, from the Rev. Dr. Walker, then Professor—since President—of Harvard College, with considerable fulness, and no doubt with ability.

Dr. Walker had discussed the logical and metaphysical problems which lie at the foundation of the whole subject. Hence the author touched these questions but lightly, and confined himself mainly to illustration from the constitution of the human mind and of the external world. He may add that though these pages were written before the existing controversies respecting the Natural and the Supernatural arose, he had a strong presentiment that such a discussion was impending and inevitable, and hence the subject is treated at some length, not only in the first but also in the subsequent books.

A. P.

In view of researches more recent than those contemplated by the author, it would have been a willing labor of love had the undersigned thought it right to attempt or to secure the revision of some portions of the work.

The Reign of Law, by the Duke of Argyll, conspicuous among many noble contributions to the recent literature of Christian evidences, the position taken by Lacordaire, and by other late popular apologists, would seem necessarily to modify statements previously felt to be sufficient with re-

ference to the Gospel Miracles. It is but just, however, that the matured opinions of one whose "voice is still," but whose memory is revered, should be stated literally in the form in which he wrote them out.

And further, the advance of modern discovery in the department of the physical sciences is so rapid, that to bring up to date a work, including evidences from the realms of material science, would need almost hourly revision.

The work of editing has thus seemed simply to require attention to certain matter of detail. The care of the manuscripts, and the review of the proofs, has been undertaken by one familiar both with the author's handwriting and with his habits of thought, the Rev. Dr. J. A. Childs.

The lectures having been delivered by my father, most of them without notes, were prepared for publication in the midst of multiform and exacting duties. The labor of so extensive a subject would not have been undertaken, as already intimated, but for a pledge given before his acceptance of the Episcopate. Once undertaken, it was to be carried forward to completion.

Health, under the pressure of years of overwork in the Episcopal office, was fast failing, but not his profound interest in such a presentation of his theme as should conciliate popular thought, and secure a recognition of the truths of the Christian religion. During a long sea voyage in search of health, the first volume had been finally reviewed for publication, when death arrested the pen, and gave to hand and mind and heart, weary, but laboring to the last, rest in the vigor of Immortal Life.

Other kindred works, projected years before, were to have

followed, when thus suddenly the summons came to higher realms of thought and duty.

The first part of this last voyage was passed in the congenial society of a select scientific party under Professor Agassiz. Upon Sundays my father invariably preached, and, as Dr. Howe remarks, "in every one of his discourses (simple enough to be understood by the rudest sailor) he drew his illustrations from nature or the walks of science, and adduced the testimony or example of men of letters and arts." In his diary, he writes, "Professor Agassiz lectures daily to his party on their contemplated work, on the Gulf Stream, the sea-weed, and the animals that live in it, and on different branches of Zoology. The lectures are very interesting and instructive."

The Holy Communion was administered upon Easter Sunday. The honored leader of the scientific party, with others among its members, were recipients.

The scientists having reached their destination, my father, in bidding them farewell, realized that as their mutual intercourse had resulted in sincere respect and affection on both sides, thenceforward he must journey deprived of most congenial society.

A man of large sympathies, as he did not believe in the necessity of partisan action within the Church, so, too, he never encouraged a partisan or class spirit in the examination of any question, or in furtherance of any views. He did not claim to belong to any Church party as such. His accomplished biographer, in writing of his early ministerial life, while he regards him as identified with a prominent Church party, in his opinions and sympathies, yet remarks his

freedom from partisanship. In later life, while possessing strong preferences and convictions, he himself always repelled the assertion that he belonged to any of the existing parties; and there readily recurs the memory of the phrase, "so called," which he used with emphasis, as at once asserting that no class could justly claim, nor could successfully maintain, a monopoly of Scientific or of Evangelic and Catholic truth. He could be silent as to doubtful matters, but never equivocal. Because he did not hold exclusively the principles of any party, he did not profess them.

In the intimate intercourse with him which the undersigned enjoyed during the latter years of his life, the impression received from conversations, most unreserved and frequent, requires the assertion that he did not ally himself with any party, not simply from motives of governmental policy, but because from the nature of his deepest convictions he could not. He saw commingled truth and error, good and evil, in the principles and acts of each and all. His sympathies went out largely, as was natural, in the direction of associations formed in the course of his education and in domestic life; but these never clouded his judgment, never so far affected his views as to enable him clearly and honestly to feel in full sympathy with, or to ally himself to, either party. His studied silence here was the result neither of tact nor timidity. He did not agree fully with either. Had he done so, his unequivocal utterances as to Slavery, and the Temperance question, prove that here he would have spoken just as decidedly in the direction of his deepest convictions. In no respects partisan, he was thus fitted to speak dispassionately as to the relations of material and religious science.

After the scientists landed in Brazil, the voyage continued, amid scenes of surpassing interest, until it reached its close, July 4th, 1865, in the harbor of San Francisco. "One by one," to quote the words of Bishop Stevens's Memorial Discourse, "the fetters that had bound him to earth were silently stricken off, that his enfranchised spirit might go free, and before the noon of that glorious day the freed soul passed up from the Golden Gate of the West to the golden gate of the Celestial City."

Those who loved him, and who knew him best, realize each day more keenly their loss and his rare and surpassing nobility of nature.

The delay in publishing these lectures, although unavoidable, is regretted, lest it should mar the fulfilment of a purpose so near his heart.

E. N. P.

UNION COLLEGE, July 4th, A.D. 1871.

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1872

RELIGIOUS PHILOSOPHY; OR, NATURE, MAN, AND THE BIBLE WITNESSING TO GOD AND TO RELIGIOUS TRUTH,

BEING

THE SUBSTANCE OF FOUR COURSES OF LECTURES
DELIVERED BEFORE THE LOWELL INSTITUTE
BETWEEN THE YEARS 1845-1853.

BY

ALONZO POTTER, D.D., LL.D.,

PROFESSOR OF MORAL PHILOSOPHY IN UNION COLLEGE, AND LATE
BISHOP OF PENNSYLVANIA.

“God hath sent Nature before us as an Instructress, purposing to send Revelation after, in order
that as a disciple of Nature thou mayest more easily hearken to Revelation.”—*Tertullian*.

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PART I.

PRELIMINARY DISCUSSIONS.

THE THREE WITNESSES.

CHAPTER I.

"As the most certain and the most important part of true Philosophy appears to me to be that which shows the connection between God's revelation and the knowledge of good and evil implanted by Him in our nature, I wish a course of Lectures to be given on Natural Religion, showing its conformity to that of our Saviour."—*Will of John Lowell, Jr.*

INTRODUCTION.

I. Object of the Work.

THE object of the following pages is to interrogate *Nature*, *Man*, and the *Bible*, as *witnesses* on the great questions which Religion presents. Is there in the Universe anything supernatural,—anything above and beyond that orderly succession of phenomena which we observe around and within us,—any Primal and ultimate cause to which they can be referred? If there be a supernatural principle, or cause, is it active or inert? Is it a Person or a Substance? If a Person, is it Finite or Infinite, one or more? If it be one Being of an Infinite nature, is that Being Wise, Good, and Holy? And in what way has He vindicated these Perfections in his dealings with mankind?

An answer to some of these questions can be found (we propose to show) in *Nature*, organic and inorganic. An answer to more of them, and one of greater clearness, can be gathered when we come to study *Man*, in his constitution, as Material

and Immortal. And an answer to all of them breaks forth from that wonderful *Book*, which cannot be candidly considered, either in its marvellous history, or in its still more marvellous teachings, without a profound conviction that God is, that He is the Rewarder of all them that diligently seek Him, and that his ways with men stand justified as the union of Holiness and Love.

In summoning the Bible to appear as a witness for God, we propose to interrogate it by the same method which we apply to Man and to Nature. In attempting to account for their origin and operations, we find that neither *Materialism*, *Pantheism*, *Dualism*, nor *Polytheism* is sufficient. Those theories break down, when we confront them, carefully and candidly, with the leading facts which are presented by our own Nature and by the external Universe. Neither man nor the universe is intelligible except on the Theistic hypothesis. It is the same with the Bible. On the supposition that it came from men only, its contents and its credentials are absolutely inexplicable. And if we adopt a supernatural hypothesis, we soon find that it is not Dualism nor Pantheism nor Polytheism that can furnish the required key. On the simple principle that objects and events must have adequate causes, we are led to conclude that the existence, the dissemination, and the increasing influence of that Book proclaims, with one voice, that its origin must be Divine, and that one God, alike Powerful, Just, and Benevolent, could alone have moved men so to speak and act. We use the Bible, therefore, in reasoning not merely with Deism, but with Irreligion and false Religion in every form.

The evidence which one of these Witnesses supplies, gains greatly in strength when we compare it with that which is supplied by the others. We find that, when they testify to the same class of facts, there is such agreement as to afford additional guarantee that the spiritual truths, towards which they point, are not illusions. The voices in which they seem

to speak, have different degrees of significance, but the burden of their testimony is the same. *Nature* is the child that indicates its parent by a few natural signs. *Man* is that same child, furnished, like educated mutes, with a much more perfect sign—language. The *Bible* is the child, endowed with speech, uttering itself in articulate language, and showing forth all the praises of the Creator. *Nature* speaks to us of God mainly through material forces and laws—through the collocations and mutual adjustments of material particles or masses. *Man* speaks to us of God, and Immortality, and Recompense; and, may we not add of Redemption, through his soul, using material instruments as its organs of thought and action? The *Bible* bears witness to God and Immortality, to Recompense and Redemption, through articulate language, that most perfect instrument of expression known to man. If three witnesses, so different in character, and each employing an organ of utterance so peculiar to itself, still concur in pointing to the same grand and superintending First Cause, that concurrence forms, in itself, a pledge that this Cause has a real objective existence.

These comparisons serve also another and hardly less important purpose: while they strengthen Theism, they contribute to lay, in the Religion of Nature, a firm foundation for faith in Christ. If man and the external world, examined by the improved methods of Philosophy, teach lessons consensual with those of Jesus of Nazareth, then it becomes likely that the God of Nature is the God of Christianity also. If the student of science discerns, beyond the immediate sphere of his researches, a supernatural Power, he can hardly fail to see that it is not a strange Power,—that the same informing mind and spirit which breathes through every page of the Gospel fills and animates Nature and Man, and that he must either admit that this world of outward and inward being, which reveals itself to his senses and his consciousness, is a world without God, or he must own that the same God sent his Son

Jesus Christ to be the teacher of mankind. Thus may the enlightened and devout Deist be "shut up unto the faith," and every inquirer be brought to see that his only choice lies between the dark gulf of Atheism and that sacred Mount where written oracles and redeeming grace are provided for men.

In his immortal work, entitled the *Analogy*, Bishop Butler has presented this dilemma with surpassing power. He there shows that the *Religion of Nature* contains no difficulties which we do not find in the daily concerns of life; and that in the *Religion of the Bible* there are only such difficulties as the Course of Nature and the events of Providence might lead us to expect. The only controversy, however, with which Butler deals is that between the Deist and the Christian. He therefore assumes the existence of God—a point which, in these pages, it is proposed to discuss. He also derives most of his proofs and illustrations from the daily experience of mankind, and from their domestic and social relations. These, however, are not the only sources, nor are they those which at this time ought to be placed under heaviest contribution. The hundred years which have passed, since Butler's great work was finished, have witnessed astonishing advances in physical science, and material progress even in Ethical and Psychological studies. We aim from these to draw offerings for the Altar of sacred truth,—to rise from the deductions of human science to those of a Divine philosophy. Here are formal researches into the nature of matter and of mind,—of matter as it exists in inert and inorganic forms, subject to chemical and mechanical laws, and of matter as it rises before us in countless varieties of vegetable and animal life,—of mind as it unfolds itself under all circumstances, and of mind as modified by institutions, by arts, and by Religion. *The science of Nature* and *the science of Man* is each yielding new and impressive truths, and on each truth, as there is a God, his character must have left a portion of its own image and super-

scription. Let us, then, endeavor to ascend through Laws to the great Lawgiver, and to find, or at least seek to find, on each of the mysterious scrolls which science unfolds, the name of God. "In wonder," says Aristotle, "does all Philosophy begin," and "in reverent astonishment and adoration," adds Plato, "must all true Philosophy end."

Besides considering the organic and inorganic worlds of matter in themselves and in their relations to each other, both should be examined in their relation to man's higher nature. Here a new field opens, rich in illustrations of the Divine Existence and Character. One of the special objects of this work is to set forth the *interdependence of different systems* of being; and to show the curious and admirable adjustments and harmonies which obtain between all these systems and man's wants as an intelligence, who has been endowed with capacity for unlimited mental and moral improvement, and who is sent into the world, and made the tenant of a house of clay, in order that, through the united agency of mind and matter, of things animate and things inanimate, he may be educated for a nobler and more enduring lot, for a "life beyond life." No object has been more constantly before the writer than to leaven these pages with the pervading idea that one great end for which man is placed amidst objects and truths so nearly allied to his whole moral and spiritual nature, is, that they should become his *disciplinarians, his instruments of true self-culture*, through the proper use of which he can rise to the stature of a beautiful and noble humanity.

II. *Method.*

We add a few words respecting the method of discussion adopted in these pages.

We do not start with the idea that the fundamental truths of Theism need to be vindicated to any unsophisticated mind. They seem to have been interwoven so intimately with the whole structure of the soul that the unsophisticated are rarely

harassed with doubt. That there is a supernatural world, and that Man was made for religion, as really as he was made for society, or industry, or duty, seems to be all but self-evident. It is hardly less clear that the great truths of the Unity and Personality of God and the Immortality and Accountability of the soul are connatural with that soul in its higher forms of development. These primary religious truths are liable, however, to be obscured and perverted in nations through the progress of a vicious culture, in individuals through the malign influence of passion, or the bewildering effects of speculation. Unbelief is a morbid condition of the faculties, which is rarely charmed away by the mere application of logical proof. It needs patient and skillful treatment, compounded of intellectual and moral influences. It needs, too, that the unbelieving heart should be enlarged by a consideration of the wants and interests of society, and sobered by the heart-searching experiences of life.* Religion addresses itself to the whole of our intellectual, emotional, and active nature, and therefore he who would scan it with only a cold logical understanding, must expect that, to him, a large share of its majesty and beauty will stand eclipsed. Hence, in this work, we shall endeavor to bear in mind that Man has Imagination, Taste, Sensibility, Conscience, and Will, as well as Understanding, and to show how in Nature, and in his own Constitution, there is inexhaustible provision for the happy exercise and the indefinite improvement of all these powers and susceptibilities. Through such illustrations, sufficiently

* "I may allude to a conversation I once held with the illustrious philosopher La Place. It was in his sick-chamber, which, I believe, he never left, and not many days before his death. Having been informed of the endowments and course of study at Cambridge, he dwelt earnestly on the religious character of our endowments, and added, 'I think this right, and on this point I should deprecate any great organic changes in your system, for I have lived long enough to know—what I did not at one time believe—that no society can be upheld in happiness and honor without the sentiments of religion.'—*Sedgewick's Discourse on the Studies of Cambridge University (England)*, Appendix, note E.

varied, we may hope that minds which would be proof against mere logical appeals can gain religious convictions that may be living sources of strength and refreshment.

Nor should we lose sight of the fact that there are various kinds of Evidence, each of which has its proper use, and no one of which therefore can claim to supersede the rest. For instance, to many a believer both Nature and Scripture speak in direct and heart-subduing tones, which he cannot but regard as Divine. His own spirit bears witness with the Eternal Spirit, and he cannot doubt that there is a Power above in which he lives. Such a believer may well think that to him, individually, external proof is of inferior value; that he need not perplex himself with the subtleties of logic, nor trace too curiously the links of that chain by which his implicit faith connects itself with the first principles of sound Philosophy. This is that species of internal evidence which is sometimes termed experimental or intuitional.

Yet when such a believer reflects, he can hardly fail to see that what is thus clear to his heart ought also to be justified to his understanding, and hence that it becomes him to know what kind and degree of logical proof he has a right to expect. He must see, too, that times may come when it will be his duty not merely to enjoy his own irrepressible convictions, but to set forth their validity and reasonableness to others. He may be called to deal with those who own no inward and direct witness to the truth, no intuitional consciousness of God and religious responsibility. In such case it will be his part to appeal to principles which others recognize; and the more generally admitted and the more incontestable those principles are, the more powerful will be his appeal, and the better adapted to every variety of mind. He should be prepared to render reasons for his faith and hope, which will not only commend themselves to every candid inquirer, but which will leave even the caviller without excuse. How often is Religion dishonored by its disciples,

when, instead of planting themselves on reasonable evidence, they take up positions which disregard the fundamental conditions of all sound reasoning,—who give everything in charge to feelings or sentiments that are but too easily confounded with the dreams of superstition or fanaticism! Happy they who have in their hearts an indescribable but joyous sense of God's presence! Yet more happy if, with that blest inmate, they unite understandings that will not rest till they gain some vantage-ground whence they can assert the convictions they glory in to the satisfaction of others, and can press with telling effect upon the strongholds of prejudice, sophistry, and passion.

There are various degrees of Skepticism, some of which pertain only to the infidel, while others belong to the Christian. The philosophical or *absolute skeptic* distrusts, on speculative grounds, *all evidence*, and holds that all our practical beliefs are insusceptible of valid, logical proof. Only in Mathematics does he find first principles which he feels compelled to accept in reasoning; and it is only in pure science that he reaches conclusions which are not in his estimation simply empirical. In the sphere of morals and Religion, he demands that which is unattainable; and because he fails to find it he resigns himself to speculative, and perhaps also to practical, disbelief. In respect to the existence of an external world, he professes the same speculative uncertainty that he does in respect to the Divine Existence or the Immortality of the soul; but in his daily life he admits that there is, among mankind and in his own breast, an irrepressible belief, which constrains, and ought to constrain, him to act as if the objects around him were real. Why should he not take the same course when he deals with those fundamental religious and moral beliefs which are scarcely less universal? "Nature," says Pascal, "confounds the Pyrrhonists."*

* Or "Common Sense confutes the Pyrrhonists, and Reason the Dogmatists."
—*Pascal's Thoughts*, chap. iv.

“Perfect skepticism,” says another, “taken by itself is invincibly repudiated by human nature; but at the same time it cannot be refuted in an absolute way by human logic. For every refutation of this kind implies a certain principle on which it rests, and skepticism admits no certain principle.” “The vice of skepticism does not consist in maintaining that it is impossible to demonstrate radically that man can have certain knowledge of truth, but precisely in requiring that demonstration. In maintaining the first point it follows reason, in asserting the second, it abjures human nature, which believes in certainty, in virtue of a vital, indestructible faith which no objection can shake. In reality, complete skepticism is impossible,—that of Sextus himself is incomplete. He denies the relations of human intelligence to things objectively considered; but, in fact, he believes at least in the existence of the human intelligence, and he can admit that only in virtue of the invincible belief which he on all other points attacks. He yields to it in the very act of denying it.”*

In other cases, the skepticism with which we are called to contend is *partial*, resulting sometimes from the state of the understanding, sometimes from the condition of the heart. As we pass from the region of physical to that of moral knowledge, the capacity for apprehending truth depends more and more on the state of the will and affections. The full recognition of God, and of his purposes, requires a certain subjective preparation, a correspondent temper and disposition of mind. *Blessed are the pure in heart, for they shall see God*,—a law which is indicated in the experience of men almost as distinctly as in the declarations of Scripture. The love of sinful indulgence, devotion to objects which, though not unlawful, still perish in the using, brings such obscura-

* History of Philosophy used in College of France, and translated by Dr. Henry. Harper's Family Library.

tion of the spiritual eye, and sometimes such a radical inversion of the moral judgment, that a clear and authoritative recognition of Divine truth must be preceded by some improvement within. All observation of the religious life of individuals and of nations goes to indicate, as a general fact, that which the sacred writers have enunciated in respect to a single people: "The heart of this people is waxed gross, and their ears are dull of hearing, and their eyes have they closed, lest they should see with their eyes and hear with their ears, and should be converted and I should heal them." "This is the condemnation that light has come into the world, and men loved darkness rather than light, because their deeds were evil. For every one that doeth evil hateth the light, neither cometh to the light, lest his deeds should be reproved. But he that doeth truth cometh to the light, that his deeds may be manifest that they are wrought in God." We have here an intimation of the real cause of much *practical* skepticism, as well as of much earnest faith in respect to Religion.

When we turn to *theoretical* unbelief, short of absolute skepticism, we find that in some of its forms it results from peculiarities of mental conformation or habit, in others from a narrow system of philosophy. As there are minds in which the logical element greatly predominates, so there are others in which the intuitive, the emotional, or the empirical is paramount; and it is altogether natural that each of these should crave a kind of evidence adapted to itself. Some persons, merely through habit, have become inordinately attached to logical processes of the understanding, and fail to discriminate clearly the cases where such a process is relevant, or the conditions under which, in matters not purely demonstrative, it must be applied. On the other hand, there are many who would ignore all reasoning applied to the evidences of Religion as profane. Referring everything to the arbitration of some inward light, some irrepressible belief, they

stigmatize alike the Revelation of Nature and the Revelation of Scripture.

Few causes contribute more, however, to these foregone conclusions, which control with despotic authority our religious opinions, than philosophy, falsely so called. Every system of Metaphysics proposes to set forth the origin of our knowledge, and the proper scope and limitation of the human faculties; but it must be admitted that no one of these systems has yet succeeded in winning the assent of the best thinkers. Even the most comprehensive of them ignores or undervalues some element of knowledge, and leaves questions still unsettled which bear directly upon the criterion of certitude. A perfect Philosophy of Religion is still a desideratum, for the simple reason that we have as yet no perfect Psychology. Until this *organ* of all philosophical inquiry is supplied, we shall find that the *theory of the Evidences* in Religion is incomplete. The most eminent philosophers of our day are not agreed as to which are primordial conceptions of the human mind, which primary and fundamental beliefs, that ought always to be assumed as incontestable, and as guaranteeing in themselves the existence of their correspondent objects. For example, the Infinite, Absolute, or Unconditioned, according to Sir William Hamilton, is incognizable and inconceivable; according to Kant, it is not cognizable, but is more than a mere negation of the conditioned; according to Schelling, it is cognizable, but not conceivable; while, according to Cousin, it is both cognizable and conceivable, being immediately known in consciousness. In such a state of our philosophy, it is difficult to analyze the highest operations of the human mind, or to demonstrate the ground on which we are warranted in passing from the subjective to the objective, from the Finite to the Infinite and Absolute.

A partial and exclusive psychology yields a narrow and exclusive method in Theology. A disciple of the extreme sensual school doubts of everything save the phenomenal.

He finds in the external world no traces of that which is supersensuous, much less of that which is supernatural, and he feels himself compelled therefore to disclaim all religious faith or to cast the burden of its support on Revelation. On the opposite side, an idealist of the extreme school must look with suspicion on all proofs of religious truth which are derived from the external world; and he will be scarcely consistent with himself if he does not reject or greatly undervalue all revelation except that which he imagines to speak to him through his own interior consciousness, and all ideas of God which make Him independent of nature and of our own souls. The ideas peculiar to Christendom, of a personal God; of full moral responsibility in man; of evil as not necessary but contingent; of the creature as perfectly distinct from, and yet wholly dependent on, the Creator,—these are ideas for which, in their explicit form, the world has been indebted for the most part to Revelation. They may be found, in an implicit state, among the contents of the human mind, or they may be deduced from facts given by our experience. But it is the reproach of our Psychology, and of the Psychology and Philosophy of every age, that as yet they have but imperfectly evolved them by analysis and reflection.

But no defects which may attach at present to the *theory of Apologetics* can justify *practical disbelief*. The claims of Religion on the conscience and the heart are determined by our own instinctive convictions, by observations, and by the concurrent voice of mankind. The navigator sails confidently, in obedience to his lunar observations, though he knows nothing of the true theory of the moon's motions. So, ages before the true system of the world had been demonstrated, time was measured by the revolutions of the stars; and even now that this system has been demonstrated, thousands hold it with unwavering confidence without comprehending one of the principles on which it rests. These principles, when we come to scrutinize them closely, may suggest doubts and difficul-

ties; but inasmuch as all experience goes to verify their justness, we do not allow such difficulties to shake our confidence or alter our conduct. On moral subjects, moreover, the same clear and vigorous demonstration is not to be expected as in Mathematics or even in Physics. "There is light enough," says Pascal, "for those whose main wish is to see, and darkness enough to confound those of an opposite disposition." A religion which suggested no difficulties to our limited capacity, opened no questions too profound for our finite faculties to fathom, would be unworthy of an Infinite God. In the presence of such a Being, and of his eternal and all-comprehending purposes, we must expect to see as through a glass, darkly; and in the obscurity of our vision we are to find exercise for patience and humility, for candid inquiry, and childlike faith. In a state of pupilage, there must be tasks for intellect as well as heart; and all through life it is our lot to find other practical subjects besides religion, and those, too, of the greatest moment, shrouded in obscurity. It is no inglorious task to hold on our way, nothing daunted, though clouds do gather over us, and our conduct every day, in the pursuit of doubtful earthly good, puts to shame the faint hearts with which we strive after a heavenly crown. "The evidence of Religion," says Bishop Butler,* "is *fully sufficient for all the purposes of probation*, how far soever it is from being satisfactory as to the purposes of curiosity, or any other; and, indeed, it answers the purpose of the former in several respects, which it would not do if it were as overbearing as is required." And again, how full of wisdom and of solemn admonition is the following passage from the same great master: "It is as real an imperfection in the moral character not to be influenced in practice by a lower degree of evidence, when discovered, as it is in the understanding not to discern it."†

One word before we close this chapter on the *skepticism*

* Analogy, Part II. chap. vii.

† Ibid., chap. vi.

with which the friends of Revelation and the friends of Church authority sometimes regard the evidences of Natural Religion. That the Atheist should decry them is to be expected, that the philosophical skeptic undervalues them is but to be consistent with himself; but that he who professes to see God in every page of his written word, or in every ordinance of his church, should be able to discern no traces of Him in his works and ways; that Sacred Writ, or the Keeper and Witness of Sacred Writ, should be resplendent with evidences of his glory, while the heavens and the earth contain no clear vestiges, no sure footprints of his Creative Power and Godhead, is passing strange. The Bible claims no such exclusive honor to itself, and for the church to claim it would be to make herself greater than the Bible. In the opening of the Old Testament, the existence of God is assumed as a truth already known from the light of Nature; and in the New Testament, St. Paul, when writing to the Romans, as when preaching to the Athenians, distinctly declared that the invisible things of God, even his Eternal Power and Godhead, had been clearly seen from the Creation of the World,—being understood by the things that were made. The church in her earlier and in her mediaeval days, the days of her Tertullians and Augustines, her Anselm and Aquinas, always insisted on the evidence which the works of God in Nature and in man bear to his existence and character.

What, then, has sometimes led believers to join unbelievers in taunting the Religion of Nature as blind and dumb? The reasons have varied with changes in Philosophy and Theology, and at the same time different persons will be found to take this course from different motives. When the storms of the Reformation broke over Europe, they shook the faith of men in many a venerable and sacred opinion. In the zeal against abuses, Christianity itself was in danger of being shorn of its full and fair proportions; and in the hands of some reformers it came forth but the “remnant of a creed,” in which the

Pagan Socrates and the Christian Theologian were to own each other as brethren of the same faith. But it was soon felt that if this were the whole of Christianity, if it were only to *republish* the Religion of Nature that such a splendid apparatus of types and prophecies had been provided, such miracles of power and mercy wrought, the disproportion between the means and the end was too appalling. Hence, in order to save the honor of God, and not part with their own cherished dogmas, they were led to depreciate Natural Religion, to declaim on the weakness of the human faculties, though these very faculties had just presumed to evacuate Revelation itself of some of its most precious contents.

But such a doctrine, although in Socinus, its inventor, it was at war alike with logic and with consistency, was a weapon too convenient to be monopolized by him. It has been appropriated, alternately, by Roman Catholics and by Protestants, by Calvinists and by Arminians. When Papists would uphold the declining authority of the church, they have sometimes not been ashamed (according to Burnet) to rally under the standard of Hobbes, and to join, with that bold prophet of Atheism, in preaching the impotence of human reason.* When Protestants would magnify the Bible,—that gift of theirs to the whole human family,—they have sometimes been willing to do it by disparaging all other sources of knowledge, and by assuming postulates inconsistent with all rational faith. They who would exalt the love of a suffering Saviour, and the sovereign grace which gave Him to mankind, have at times

* "And now that the main principle of religion was struck at by Hobbes and his followers, the Papists acted upon this a very strange part. They went in so far even into the argument for Atheism as to publish many books, in which they affirmed, that there was no certain proofs of the Christian religion, unless we took it from the authority of the Church as infallible. This was such a delivering up of the cause to them, that it raised in all good men a very high indignation at Popery; that party showing that they chose to make men who would not become Papists become Atheists, rather than believe Christianity upon any other ground than infallibility."—*Bishop Burnet's History of his Own Times*, vol. i. p. 188.

painted the ruins of the fall in colors so dark that no understanding seemed left to man through which to appreciate truth, nor any genial sentiments through which to feel its blest attraction or its infinite majesty. So with others in their reaction towards a milder faith. For often they have feared to admit the force of evidence supplied by Nature, lest they might seem to detract from Revelation, and stultify themselves by teaching for Christ's Gospel what is "as old as the Creation." The disciples of the sensual philosophy, too, holding that the senses were the only inlets of knowledge, have thought that they found in the printed characters on the page of Scripture the only visible signs of God; and that with mountains of matter heaped up before us, the attempt (to use the language of a writer of this school) to extract from them the ideas of an Invisible Creator and Governor is "as fruitless as that of the giants invading Jupiter."* And if from them we turn to their transcendental antagonists in England, who would use the Philosophy of Plato in the revival of Catholic truth, from their halls of learning sounds the stern rebuke that we are "unsettling the foundation of Christianity by resting it on the false support of an unsound Natural Theology, because we distrust the true basis on which it was placed by its founder,—the testimony of its teachers."†

That the Bible recognizes the Religion of Nature, and the capacity of man to discern it, is too evident, it seems to us, for argument. We may add that sound logic requires that it should be recognized by *every believer as an essential preliminary to his faith in Revelation*. The claims of the Bible to our implicit belief rest on its veracity, and its veracity can hardly be established unless we show that the men who wrote it were guided by a wisdom that cannot err, and will not lie; or, in other words, by a wisdom that is Divine. Before, however, we can prove that a Divine sanction rests on the Sacred

* Ellis's Knowledge of Divine Things, p. 460. † Sewell on Plato, p. 93.

records, we must assume that there is a Divine Being, and that all his words are Yea and Amen. To employ the Bible, then, in proving the existence or perfections of the Deity, is to beg the very point in debate.

It is that form of *petitio principii* which logicians generally term the circle,—first assuming that there is a God of infinite wisdom and veracity; from thence inferring the Divine authority of the Scriptures; and then proceeding from this last to conclude that there is a God.

Are the miracles of Scripture appealed to as evidence that there is a God,—thus making the Bible contain within itself all needed premises for proving its own inspiration? But how know we that those which are recorded as miracles are so indeed? Deny that there is a God, or that He can be made known to us independent of Revelation, and we see not how we are to evade the force of Hume's celebrated argument (against the possibility of proving miracles), which he has founded on their intrinsic improbability. We must either recognize beforehand the existence of a Being Almighty, and therefore able to suspend or reverse the laws of Nature; All-wise and gracious, and therefore likely to reverse them, if thereby man's welfare, or his own glory, might be essentially advanced, thus establishing an antecedent *moral probability* in favor of miracles,—or we must reduce the whole question to one of *physical probability*. Here all experience steps in to attest the absolute uniformity of physical phenomena, or of what is called the course of Nature. Instances without number are adduced in which events long thought miraculous have proved at last to be but legitimate effects of established laws. The brood of spurious miracles which have been employed to deceive and betray mankind are appealed to, and the inviolable order and regularity of natural laws insisted on, till we are constrained to feel that if the existence of a Being able to work such wonders be not certified to as from other and antecedent evidence, it can be hardly furnished by the wonders themselves. Between

the moral probability which assumes that there is a God, and the physical probability which leads us to assume that the laws of Nature are never suspended, we must in such case take our choice; and if we elect the latter, no alternative remains but skepticism in regard to whatever of supernatural there is in Revelation. And such is actually the course of a most able writer and believer in Christianity, who, not long since, presented himself as the champion of religious faith. Mr. Babbage, in his Treatise on Natural Theology, styled the *Ninth Bridgewater Treatise*, undertakes to show that miracles are but natural and necessary results of physical laws of vast generality, laws which in virtue of their proper nature intermit at intervals so great that the whole period of man's abode on the earth may have passed, and yet the time for such intermission may not yet have come. When it does come, the miracle takes place not as the effect of an immediate interposition from Heaven, but as the proper part of a physical series long since established; and hence (an inference not made by Mr. Babbage himself, but still unavoidable) to appeal to it as proof of present supernatural agency must be fallacious. We shall have occasion hereafter to protest against such a theory of miracles;* one which would vindicate them from the cavils of disbelief by transforming them from Divine interpositions into natural phenomena. But the result which Mr. Babbage has reached, in spite of his belief in God, is that to which, as it seems to us, every logical mind must be carried, if, prior to its examination of the Bible, or independent of it, it can see no evidence of the Divine existence.

If we say that, independent of miracles, such a mind could find sufficient traces of the Deity in the substance of Revelation, in the transcendent excellence of its instructions, the matchless dignity and simplicity of its style, the superhuman character of Christ, we cheerfully assent. But in this case

* See Part I. chap. iv.

we appeal to natural rather than supernatural proof, to the very same proof in kind as that which we employ when, from the character of the laws which have been impressed on material and spiritual substances, we rise to the existence and character of a Law-maker. The tree is known by its fruits. The fruit to which appeal is made in such case is the written Word,—the fruit to which we refer in Natural Religion is the outward and inward workmanship. If the one is written all over with the signature of the Divinity, why not the other also?*

* See Part IV.

CHAPTER II.

RELIGION FOUNDED IN THE CONSTITUTION OF HUMAN NATURE.

I. THE FACT.

OUR object, in this chapter, is to show that humanity imperatively demands some form of religious faith, and that the only form which adequately meets that demand is the theism of Christianity. If this position is established, it becomes evident that Religion is not to be regarded as something imposed on man by arbitrary authority, but as a fundamental element in his original constitution. It will become apparent, too, that the Religion of the Bible is no alien system, superinduced by fraud, force, or fanaticism, but a collection of truths and influences, which find in the soul of man a congenial home.

What is Religion? Without attempting a precise definition, it may be sufficient to remark that, in its most general sense, it involves the conception of a power or powers above Nature, on which in greater or less degree we are dependent, and to which we are bound to render service. The ideas of dependence, worship, and obedience, and of a supernatural Power, are more or less involved in every form of Religion, whether it be Monotheism, Dualism, or Polytheism.

That Religion, in this general sense, represents a fundamental characteristic and necessity of man's nature will be apparent—1, from the testimony of the wisest observers; 2, from history; 3, from the structure of languages; and 4, from the effect of renouncing it on the character and welfare of men.

1. *The testimony of wise men*, who have studied our nature most successfully in its constitution and history, is unanimous on this point. Says Edmund Burke, "We know, and it is our pride to know, that man is by his constitution a religious animal, and that Atheism is against not only our reason but our instincts, and cannot continue long." Says Heeren, one of the ablest and most learned of modern historians, "Belief in higher existences, who influence our destiny and corresponding rites of worship, is so connected with the feelings of man that it springs from within him and exists independent of all research or knowledge."^{*} Lord Herbert the Deist, and John Wesley the Methodist, unite in designating the power to know and the disposition to worship a Supreme Being as that which alone or chiefly discriminates man from all other animals. Plato, in the Tenth Book of his Laws, when about to enter on the argument of Natural Theology, appeals to this universality of religious faith among unsophisticated minds, and does it, to use his own words, "with hatred and indignation against those who compelled (him) to engage in such an argument."

2. *History attests the same fact.* No nation, advanced above the most abject barbarism, has been discovered which had not some kind of religious faith; and it is doubtful whether the absence of all such faith can be justly affirmed of any people whatever. But one nation, possessing the ideas of God and immortality, was ever known to renounce them even in form; and in that memorable case (the French) it was not the deliberate act of a whole people, but rather the phrensy of a Parisian mob, bent on escaping from civil grievances, real or imaginary, which they had been taught to associate with the clergy and the prevailing faith. "What nation is there," says Cicero, "or what race of men, which has not, without any previous instruction, some idea of the gods? Now, that

* Researches on Ancient Greece, chap. iii.

in which all men agree must necessarily be true." "If you go through the earth," says Plutarch, "you will perhaps observe cities without walls, without letters, sunk in the greatest ignorance; but we shall not see one which does not worship the Deity. But even if, as some assert, there are tribes to be found among whom no traces of religion are discovered, it ought not to seem strange that barbarians—who have in some measure thrown aside the human nature and assumed a kind of brutal wildness—have lost that which is peculiar to man. Without understanding, there is no notion of a Deity and no sense of religion, and therefore these cannot apply to the brutes, and, consequently, not to those who have almost degenerated into brutes." Religious, like other ideas, presuppose some degree of mental development; and when the means for such development are wanting (as in the case of uninstructed deaf mutes), we are not to wonder that they do not exhibit or even possess them. It is affirmed, however, by those who teach the deaf and dumb, that in proportion as they become capable of reflection, in the same proportion they manifest a disposition to inquire into the Original Cause of things, to recognize their accountability to an unseen Judge, and to find an object for religious worship and adoration. "It would be difficult," says Heeren, "and perhaps impossible, to find a nation which can show no vestiges of religion; and there never has been, nor can there be, a nation in which the reverence for a superior being was but the fruit of refined Philosophy."

History yields another great fact, which demonstrates that Religion is one of the essential wants of our nature. Statesmen and Legislators have found that nations could not be well and wisely governed without it. Poets, and Artists too, all the world over, have appealed to it as one of the most powerful means of impressing the Imagination and the Heart. "If there were no God," said Voltaire, "we should be obliged to invent one;" and the whole history of literature and of

nations witnesses to the sagacity of the remark. Take away from laws all religious sanction, and from poetry, painting, eloquence, sculpture all reference to the supernatural, and who does not feel that the most essential element of their power and beauty would be gone? Now, neither poets, legislators, nor statesmen are so mad as to propose the introduction into human nature of any new principles. They take man as they find him. By careful and extended observation they learn what sentiments and aspirations are most deeply planted in his soul, and then vindicate their wisdom and skill by the success with which they appeal to them.

3. *The languages of the earth bear similar testimony.* A nation's language is the best exponent of the natural operations of its mind and heart. The original and necessary conceptions of those who speak it, as well as their peculiar characteristics and experiences, become incorporated with its whole structure. Hence whatever we find in all languages may be assumed as the universal attribute of humanity. Now, it is believed that there is no language of ancient or modern origin, whether spoken by savage or civilized man, in which the distinction between the natural and the supernatural, the human and the superhuman or divine, the morally right and the morally wrong is not in some way indicated. Every language into which the Scriptures have been translated has yielded terms or phrases to designate God, Immortality, and Recompense; and the pre-existing notions and capacities of the people have prepared a way for the teachings of the Missionary. Here, then, is evidence that everywhere man has been carried, by the instinctive workings of his heart, towards religious faith. If the fact that, with rare exceptions, he everywhere seeks society prove him to be a social being, the fact that he everywhere recognizes objects of worship proclaims him, on the same principle, to be by nature a "religious animal."

4. *The opposite effects of Atheism and Religion* prove also

that faith in the latter is demanded by the constitution of man's nature. "To deny a God," says Bacon,* "destroys magnanimity and the raising of human nature." "Man, when he resteth and assureth himself of divine protection and favor, gathereth a force and faith which human nature could not obtain. Therefore as Atheism is in all respects hateful, so in this that it depriveth human nature of the means to exalt itself above human frailty." "Let a man live," says Dr. Arnold, "on the atheistic hypothesis, the practical result will be bad: that is, a man's besetting and constitutional faults will not be checked, and some of his noblest feelings will be unexercised,—so that if he be right in his opinions, truth and goodness are at variance with one another, and falsehood is more favorable to our moral perfection than truth, which seems the most monstrous conclusion a man can arrive at."† All this appears so obvious, and is so clearly confirmed by the testimony of history and experience, that we need not dwell upon it further in this place.

We conclude, then, that *faith in religion of some kind is the law of man's nature*; unbelief, the exception. All the Atheists of whom we have knowledge may be found in one of four classes:—First, ignorant but self-sufficient inquirers, who, though they may have been honest in the pursuit of truth, yet chose paths so tortuous, and brought to the subject so little of the genial light of a warm heart and an humble spirit, that they lost themselves in a labyrinth of speculation or became inflated with pride and vanity. Sir Samuel Romilly, writing from Paris, of the French Atheists of the last century, says, "I am not vain enough to pronounce what is the extent of Diderot's or D'Alembert's learning and capacity, but, without an overfond opinion of myself, I may judge of the subordinate Atheists, the mob of the Republic of Letters, the plebecula who have no opinion but what

* *Essay on Atheism.*

† *Letter in his Life.*

their arbitrary tribunes dictate to them, and in these I have generally found the grossest ignorance. The cause of modern Atheism, like that of the Atheism of antiquity, as Plato represents it, is the most dreadful ignorance disguised under the name of the sublimest wisdom.”*

A second class of Atheists is composed of the suffering and oppressed, who have abjured religion only because it has become associated in their minds with the wrongs or evils they endure. A third class, of the abandoned in life and manners, whose safety so urgently requires that there should be no avenging God, that as parties interested in the issue of the controversy they cannot claim to be its arbiters. And a fourth class, of those who, having rested their faith on a false foundation early in life, underwent, on discovering its rottenness, a violent revulsion of feeling, and, with their superstition, renounced both their reason and their higher instincts.

The all but universal prevalence of religious faith, and its deep connaturalness with man’s instincts and wants, is the only fact which we insist upon here. Whether it spring spontaneously from the mind, in the presence of the objects and facts by which it is surrounded, or whether, in the first instance, it is given by external revelation, and then transmitted by tradition, is a question which does not touch the position taken in this chapter. To us it appears likely that a faith so momentous should be entrusted, at the outset, to the simplest and most necessary workings of the soul, rather than to the shifting sands of tradition. But from whatever quarter it may first come, the human mind seems to find in the outer world of sense, and the inner world of thought and feeling, continual evidences of its validity. Rarely, as we have before observed, is this religious belief, when once attained to, ever afterwards surrendered. In the vicissitudes of a nation’s history, everything else may have been parted with,—

* See his *Life*, vol. i.

manners, arts, institutions;—its ancestral pride, its love of glory, its patriotic fervor, all may have died out,—but it does not let go all religious faith. Though corruption may have come in as a flood, and public virtue and private manners may alike have caught the pestiferous infection, still the soul cannot but have something to worship, something beyond the world of sense, in the vast regions of the infinite and invisible, to fear or love.

Is it said that most of the religions which have prevailed among men have been monstrous perversions of truth, and that to cling to such superstitions argues but little religious sensibility, and still less of religious capacity? We answer, that the counterfeits which have been imposed on mankind, under the hallowed name of religion, only prove its reality. That men instinctively love truth does not protect them from error, but often impels them to cling more tenaciously to it when it is truth's counterfeit. And so it is with religion. Long ago the caricatures which have gained its name would have been driven from the world but for the portion of truth which they contain, and the appeal which they thereby make to man's deepest and most irrepressible convictions. New counterfeits, as they appear, gain a temporary currency only, because men feel that there is genuine coin somewhere, and because they are but too willing to satisfy the cravings of their religious nature at the expense of their understandings or their virtue.

What is the Theism of the Christian Scriptures? If, to the ideas already specified as forming our most general conception of Religion, we add the notion of one Personal and Supreme God, and also that of the immortality and future accountability of man, we get *Theism*. To these, again, add the idea of Redemption, and we have the most essential notions conveyed by the terms *Christian Theism*. We are to show that the demand of human nature for some religion cannot be completely satisfied short of Theism, and that the Theism

taught in the Christian Scriptures is that which is best fitted for the purpose. The full development of these views will be reserved for the succeeding parts of this work. In this place they are merely indicated.

The unity and spirituality of God were discerned even by wise Pagans, when surrounded by idolatry and polytheism. "When I write seriously," says Plato in his Epistle to Diogenes (if Plato were the author), "I begin the Epistle with the mention of *one God*; if otherwise, with the mention of *more than one*." "We must, above all things, learn," says Epictetus, "that there is one God, who governs all things by his providence." So Pythagoras, Plato, and Numa, according to Lactantius, recognized the spirituality of God, and on that account forbade any image of Him to be made. Tertullian, in his treatise called the *Witness of the Soul*, shows that everywhere, in the midst of their corruption and idolatry, men unconsciously recognized the One true God. That eloquent treatise is little more than an expansion of the following passage from the same author's *Apology*: "Will ye that we prove Him to be, by the *witness of the soul itself*, which although confined by the prison of the body, although straitened by evil training, although unnerved by lusts and desires, although made the servant of false gods,* yet, when it recovereth itself as from a surfeit, as from a slumber, as from some infirmity, and is in proper condition of soundness, it nameth God by this name only, because the proper name of the true God. 'Great God,' 'Good God,' and 'which God grant,' are words in every mouth. It witnesseth also that He is its Judge. 'God seeth,' 'I commend to God,' 'God shall recompense me.' O testimony of a soul by nature Christian! Finally, in pronouncing these words, it looketh not to the Capitol but to Heaven; for it knoweth the dwelling-

* St. Cyprian has the same sentiment in chapter v. *De Idolorum Vanitate*, viz., *Atque haec est summa delicti, nolle agnoscere quem ignorare non possis.*

place of the true God. From Him and from thence it descended."

Tertullian here copies St. Paul. In his Epistle to the Romans, that Apostle clearly maintains the competency of the heathen mind to discern, without the aid of Revelation, the Eternal power and Godhead of the Creator, and many of the moral requirements of his Law. Idolatry, with all its atrocities and degradation, he denounces not as the necessary offspring of natural imbecility and ignorance, but as a device introduced for the express purpose of obscuring the great truths of Theism taught by Nature and of quieting consciences ill at ease. And whoever would see this account of the origin of idolatry confirmed, by a critical examination of the Religions and Literature of the ancient world, has but to read the *Intellectual System of the Universe*, by Cudworth. He will there find that, amidst all the monstrous inventions of Paganism, the doctrine of one Eternal and Supreme God always retained some hold on men's minds; that no age, nor state, nor people can be found where the Jehovah of the Bible was not dimly seen as Jupiter or Ammon, as Deus or the Unknown God. The idea that Polytheism was the highest form of religious belief, even among Polytheists themselves, he puts to flight; and he shows that wherever man has dwelt there he has been taught, from the world within and the world without, that God is, and that He is the rewarder of all such as diligently seek Him.

The human mind, then, in proportion as it is free from vice, and developed by active culture, demands a faith which rests in Theism. This is rendered still more apparent by the history of Philosophy. The early Philosophies were Cosmogonies, or attempts to account for the origin of the world, and especially of the material universe. Now, of the problem which relates to the origin of things, there seem to be but four possible solutions: that which makes them the creation of one Spiritual and Personal God (Theism); that which traces

them to two or more separate Powers (Dualism or Polytheism); that which identifies the Creator with his creatures (Pantheism); and that which finds the origin of things in matter eternal and self-subsisting (Materialism). To any one at all acquainted with the history of Philosophy, it would be superfluous to say that the last of these, which is the only Atheistic school, has always, both in the East and West, been small. The vast majority of philosophers have recognized a supernatural origin for the universe; and in the West this recognition has, in a great proportion of instances, embraced the idea of *one* God, Creator of Heaven and Earth. Even in the Chinese Philosophy, it is assumed, at the outset, that the human mind has always conceived the primitive root and ground of all things as in God, and to this God, as at once above, and yet supporting all things, they have given the name of the *Great Summit*. Of all the Grecian Schools, we find but one (the Physical Eleatic) which attempted to dispense with the notion of one God as the source and origin of the universe; and that was a natural and almost inevitable recoil from the extravagant results reached by the Metaphysical Eleatics. It was Materialism, as a simple reaction from Pantheism. If we begin with Thales, and come down through Anaxagoras, Pythagoras, Heraclitus, Socrates, Antisthenes, Plato, and Aristotle, we find them all pointing to God as the author of all things, and gradually evolving out of the Pantheistic conceptions, which had come from the East, the idea of One Personal God, the source of all motion (Aristotle), the substance of all ideas and the cause of forms (Plato), the active principle of the universe (Stoics), the wise man's model, and the perfection of order, justice, and holiness.

Another evidence that the doctrines of Christian Theism are connatural with humanity, in its best estate, is found in the fact that *this*, more powerfully than any other form of Religion, *promotes the improvement of the individual and of society*, and that it becomes the source of enjoyment and the

spring of advancement, just in proportion as human nature attains to its most pure and defecated form. In proportion as faith in Religion approximates to a living and simple Christianity, in the same proportion it becomes a great regenerator for the individual and for the state. Was ever man made worse by faith in One God as Creator of all things, and righteous Judge of quick and dead? Was he ever made better by renouncing that faith? Can any one imagine that Epicurus would have been a worse man if he had believed with Anaxagoras, or that Newton would have been a better one if he had doubted and scoffed with D'Alembert? Can we think that Augustine or Luther, Alfred the Great or Sir Matthew Hale, Locke or Leibnitz, Sir Robert Boyle or John Milton, were deteriorated in character by their faith in the Christian's God; or that Cicero and Aristotle, Plato and Socrates, would not have been yet nobler men, men of loftier spirit and of greater service to mankind, if their hearts had been awed and cheered by the light which beams from a supernatural revelation? Lord Shaftesbury was a Deist, yet how much more genial and ennobling is even his philosophy than that of the Polytheist, the Pantheist, or the Atheist! He is insisting on the value of "a steady opinion of the superintendency of a Supreme Being, a witness and spectator of human life, conscious of whatever is felt or acted in the universe; so that in the perfectest recess or deepest solitude there must be one still presumed remaining with us whose presence singly must be of more moment than that of the most august assembly upon earth; and that in such a presence, as the shame of guilty actions must be the greatest of any, so must the honor be of well-doing, even under the unjust censures of the world. In this case, it is very apparent how conducting a perfect theism must be to virtue, and how great a deficiency there must be in Atheism."*

* *Characteristics*, vol. ii. p. 57.

As with individuals, so with *nations*. Public spirit and Public virtue have always flourished most when religious faith has been simplest and most active. The marriage tie and the right of property, the two most powerful elements in social progress, have always been held sacred in proportion as the religion of the Bible has been honored. Hence the solicitude with which wise statesmen have always nursed and encouraged the popular faith in the avenging gods; hence the special care with which the best and wisest Christian Legislators have endeavored to protect their people from the inroads of Superstition, Idolatry, and Irreligion; and hence the fact, so striking in the history of ancient states, that their earlier periods, those in which they felt most deeply their dependence and their accountability to Heaven, were their periods of most heroic enterprise. When national vices have sway, when public faith is held of little account, and private manners are dissolute, then it is that Irreligion, or false Religion, is most apt to flourish,—at once the effect and the cause of degeneracy:—its effect, because the corrupt heart resorts to it as a shelter against the protests and rebukes of conscience; its cause also, since it emboldens its disciples to a tenfold hardihood in sin. Thus it was in Greece, after the age of Pericles, in Rome, after that of Augustus, and in France, at the close of the detestable Regency.

If we have stated the facts correctly, the conclusion seems inevitable. Either we must suppose that the opinions which have been invariably attended, in individuals and in states, with the noblest developments of worth and power,—which, adopted heartily, render men and nations better and wiser, and therefore happier,—which, abandoned, or held only in name, leave them to sink rapidly in all that adorns and dignifies life,—we must suppose that what is followed by such results is *truth*, or we must suppose that *Error* is the prolific parent of blessings, the generous benefactor of mankind! Elsewhere error is always noxious, truth always beneficent. Is it in Religion

only that we are to look for an exception? And if we are to estimate different systems of Religion by their influence on the welfare of mankind, is it not evident that the Religion of the Bible has paramount claims on our regard? All experience proclaims that held in simplicity, and with a living faith, its doctrines constitute the safety of nations and the unfailing well-spring of improvement and happiness.

The *necessities of Art, and of our daily life*, attest also the transcendent value of a Divine faith. What would become, for example, of the eloquence, the poetry, the fine arts of the world, if we were to eliminate from them the ideas of Religion? Homer, without his gods, would be Homer no longer; nor would Virgil be himself without his dark world of the mysterious and supernatural. But modern Literature has found in the Scriptures of the Old and New Testaments yet grander means of swaying the hearts of men. The mythologies of Pagan Poetry "pale their ineffectual fires" before the celestial agents of a Milton and a Dante, and these, again, are poor and tame when compared with the visions of Isaiah and Job, of Ezekiel and St. John. Let Painting and Sculpture give back what they have borrowed from the Gospels and the Acts of the Apostles, and they would be actually impoverished. If the theism of Moses and David be a fiction, the human heart has stamped it as a fiction necessary to its grandest and most affecting conceptions. If the story of Jesus and his disciples be a fable, it is a fable which the human soul most imperiously craves at the very moment that it swells with the largest thoughts and the most sublime aspirations. When the mind is ushered into an ideal world, it does not part with reason and truth. It sees them only expanded and illuminated in the light of imagination and passion; and that it *must* at such times have these visions of Divinity, of Angel and Archangel, of an avenging Hell and a blissful Heaven,—this is proof how congenial they are with Truth and with our noblest moods of being. And that all

modern Art has turned instinctively to the story of *redemption* from sin, and triumph over sorrow and corruption,—this proves that redemption is no strange fact, but one most con-natural with the necessities and aspirations of our souls.

And how is it if we look from Literature to Life? There are times when the even tenor of our days is rudely broken; precipices seem to yawn,—tempests lower,—all our strength seems but weakness, and all our wisdom but imbecility. At such an hour, when perplexity seizes the soul, does it crave no Almighty Counsellor? No friend as rich in resources as He is constant in love? Is there no panting after One who can hush this wild war of the moral elements, and anchor us safely where there is hope and peace? Or when the heart sits desolate, paralyzed by bereavements, which make life one fearful void, one mighty tomb,—when all the consolation which sympathizing friends can pour into our ears seems to freeze upon our spirits,—at such an hour, never to be forgotten, does not the heart crave higher ministry than any earth has to give? Does it not crave a voice of comfort from other worlds, from a power that can bind up what itself has broken, and which seems to say, There is balm even for thy wounds: *Fear not, for I am with thee?* Or, again, when the summons rings upon our ears that the hour for arduous, eventful duty has come,—when we feel that immeasurable good or evil may ensue from what we are about to do or dare,—when we grapple with the untried difficulties of the task, faint-hearted friends, untiring, subtle foes, a frowning world, beleaguered truth,—when only duty and honor cheer us on, while cold prudence, or false shame, or weariness of spirit bid us back,—who does not feel, at such an hour, his need of strength from Heaven, from One who can reassure his fainting zeal, and give him pledge, if not of literal success, yet of full and final recompense? How has it been with the men who have embalmed their names in the world's history, and who are now honored as its best benefactors? The illustrious dead, who, though they sleep in

glorious beds, serve as watchwords, as loadstars, to those who would live for their country and for mankind,—what fired their eye and braced their hearts when all things seemed to be against them? Were there no thoughts of that verdict of aftertimes, which their conscious spirits, though disembodied, might still be permitted to hear? Was there no thought, above all, of a superintending, succoring Providence,—no sense of the Presence of One, like unto the Son of Man, who seemed to be with them in the fiery furnace, and whose pledge and promise they had that He would be the shield of their strength and the sword of their excellency?

Even in hours less trying, what gives to life its flavor?—what prevents it from becoming vapid as if the wine was on its lees? In prosperity, what saves the heart from the sickening sense of satiety?—what from despondence and disgust amidst the minor disappointments of our lot?—what cheers the hardy sons of toil when struggling beneath the pressure of present or of anticipated want?—and in all the countless changes and chances of a life, never free from vicissitude, what keeps the heart poised in tranquil trust and hope? Or, on the other hand, does that heart swell with delight at escape from danger, at restoration from sickness, at deliverance from pinching poverty, at emancipation from the oppressor's wrong, the proud man's contumely? How irrepressibly does it yearn after the presence of its benefactor,—and how deeply does it feel that it can taste the fulness of a transporting gratitude only in communion with One so exalted in power and wisdom that He can become the Efficient, not merely the instrumental, cause of our felicity! Yes, how necessary to add this sentiment of pious, religious thanksgiving to the mere pleasure of escape, and to cherish the ennobling consciousness that, though but worms, we are yet the objects of care to God!

In exchange for such unfailing well-springs of happiness, which can be found in religious faith, what has skepticism to

offer? Let one of its most favored votaries answer. "Methinks," says Hume, in his *Treatise of Human Nature* (Book I. Part IV. sect. 7), "methinks I am like a man who, having struck on many shoals, and having narrowly escaped shipwreck in passing a small frith, has yet the temerity to put out to sea in the same weather-beaten, leaky vessel. My memory of past errors makes me diffident for the future. The wretched condition, weakness, and disorder of the faculties I must employ in my inquiries increase my apprehensions; and the impossibility of correcting or amending these faculties reduces me almost to despair, and makes me resolve to perish on the barren rock, on which I am at present, rather than venture myself on that boundless Ocean which runs out into immensity. This sudden view of my danger strikes me with melancholy. I am affrighted and confounded with that forlorn solitude in which I am placed in my philosophy, and fancy myself some strange, uncouth monster, who, not being able to mingle and unite in society, has been expelled all human commerce, and left utterly abandoned and disconsolate. Fain would I run into the crowd for shelter and for warmth, but cannot prevail with myself to mix with such deformity. When I look abroad, I foresee on every side dispute, contradiction, anger, calumny, and detraction. When I turn my eye inward, I find nothing but doubt and ignorance. Every step I take is with hesitation, and every new reflection makes me dread an error and absurdity in my reasoning. Where am I, or what? From what causes do I derive my existence, and to what condition shall I return? Whose favor shall I court, and whose anger must I dread? What beings surround me, and on whom have I any influence, and who have any influence over me? I am confounded with all these questions, and begin to fancy myself in the most deplorable condition imaginable, environed with the deepest darkness, and utterly deprived of every member and faculty."

Is this an enviable state of mind? Deeply as we may com-

miserate his lot who is driven by his profligacy to avow himself an Atheist, yet even he perhaps is less intensely wretched than a spirit like this, endowed with almost matchless subtlety, when once it has recoiled from ancestral faith, and cast itself adrift on the boundless waste of Skepticism.

“Are these the pompous tidings ye proclaim,
Lights of the world and Demigods of Fame?
Is this your triumph, this your proud applause,
Children of Truth and champions of her cause?
Let Wisdom smile not on her conquered field :
No rapture dawns, no treasure is revealed!
Oh, let her read not loudly, or elate,
The doom that bars us from a better fate!
But, sad as angels for the good man’s sin,
Weep to record and blush to give it in.”

II. THE FACT EXPLAINED.

We have now seen that man is so constituted that Religion, considered objectively, is a leading want of his nature, and that Christian Theism is that form of religion which seems to correspond best with the demands of the soul. The more carefully the ideas of God, Immortality, Recompense, and Redemption are considered, in their connection with our nature and with its condition and aspirations, the more clearly will they vindicate themselves as the true correspondents to our religious life. It remains, then, that we designate those principles in human nature which make man a religious being, and which authorize him to yield with cordial and confiding trust to the claims of the theistic hypothesis. Here, as elsewhere, our criterion of certitude must be found in the constitution of our own minds. The more full development of these principles will be found in subsequent parts of the work. Here we merely indicate them.

I. First in importance, perhaps, is *conscience, or the moral sense* by which we recognize our obligations as moral and

accountable beings, and reach the conviction or apprehension that our accountability extends beyond this life, and up to a Power higher and holier than any on earth. This principle of our nature brings with it the consciousness that we are persons, not things; and, taken in connection with the fact that rewards and punishments are not dispensed in this world precisely according to men's deserts, it points most significantly to a Righteous Judge and a Retributory Life in another world. The evidence which this principle supplies, in respect to God, Immortality, and Retribution, is dwelt upon at length in the *third Part*.

2. Another principle in our nature, which points in the same direction, is the *instinctive disposition to worship and reverence*. The following fact is stated on the authority and in the words of M. Villemain, one of the most eminent scholars of France. It occurs in an address before the French Academy: "We have read, some years since, the psychological confession of a writer (M. Santervis) whose father subjected him to the trial advised by Rousseau. Left alone by the death of a tenderly beloved wife, this father, a learned and contemplative man, carried his son at an early age into the country, and there, allowing him no communication with any one, he cultivated the understanding of the child by the sight of natural objects placed about him, and by the study of languages almost without books; at the same time keeping away from him any idea of God. But his spirit found what had been refused. The sun which he saw rise every morning appeared to him the All-powerful Benefactor of which he felt the need. He soon formed the habit of going at sunrise into the garden to render homage to this God which he had made for himself. His father surprised him one day, and showed him his error, by teaching him that all the fixed stars are so many suns scattered over space. But such was the discontent and sorrow of the child, thus deprived of his worship, that the father was subdued, and finished by confessing to him that there

was indeed a God, who was the Creator of heaven and earth."

Facts of a kindred nature are so numerous, that we can hardly fail to recognize a disposition to worship and religious adoration as an original element in the constitution of the human soul, and it is so ranked by many writers on Psychology. Taken by itself, this principle does not necessarily indicate the Unity or Spirituality of God. For this purpose we need *consciousness* and the *moral sense*, and especially the two primordial conceptions of the human reason which follow.

3. One of these, *the idea of Causation*, seems to arise spontaneously in the mind at the sight of objects and events. That these must have had a Cause adequate to produce them, that the nature of the cause must correspond to that of the effect, and that all derived or dependent causes necessitate the conception of an original independent cause seem to be primary beliefs, which spring from the very constitution of the mind. They seem, taken in connection with the consciousness of power in ourselves, to involve ultimately the notion of a Self-existent Eternal First Cause, All-wise and All-powerful. To develop this notion, from the simple fact of existence, and to establish its objective validity, has been the object of many Metaphysicians, of whom, perhaps, none has achieved a more brilliant reputation, in this department of Theology, than Dr. Samuel Clarke.* Use is made of this principle in the next chapter, and in the second and third Parts.

4. *Another law of thought* is fruitful of religious impressions. It is that which constrains us to *find evidence of an intelligent purpose in the relation of means and ends*. This is commonly called the doctrine of *Final Causes*, and involves the conception of an Intelligence competent to devise and effect the

* Demonstration of the Being and Attributes of God.

manifold adjustments and adaptations which we find throughout the material and moral worlds. Taken in connection with our own conscious personality, and the free intelligence with which, in our contracted sphere, we arrange corresponding adjustments, this principle authorizes and demands the recognition of a Personal Creator. It will be found, combined with the preceding principle, in the next chapter, entitled *Illustrations*, and it will recur constantly throughout this work. Aristotle* boasts of having been the first to speculate distinctly of final causes; but the argument was employed with great force and felicity, by Socrates, before his time, and it has constantly been appealed to since, as affording a basis for Natural Theology, more impressive and more generally intelligible than almost any other. In near relation with the doctrine of Final Causes is that of the *Unity of Composition*, or of *Fundamental Types in the Organic World*, according to which all Plants and Animals are constructed. It is a modern discovery, and, as instruments of investigation in Natural Science, the two are now admitted to be of co-ordinate value and importance. The one is termed the *teleological*, the other, the *morphological* method. "The teleological proof," says Nitzsch,† "is specially important in our day, when God is denied in his Eternal personality, because it does not assume God's existence without conceiving Him to be self-conscious and omniscient." "A reciprocal relation," says Fichte,‡ "between end and the means cannot exist apart from a consciousness imagining and realizing this relation. Now, such relation to an end is universally found in the actual world; thus the Absolute, in the realization of the world, must be an absolute that imagines the world and consciously penetrates it."

5. In closing this enumeration of principles, which go to

* Met. I. vii. p. 88.

† Christian Doctrine, p. 149.

‡ Quoted by Nitzsch.

constitute the religious soul in man, we ought not to omit certain fundamental conceptions of the intuitive reason in which the idea of God is held to be contained implicitly. By the argument *a priori*, these fundamental conceptions are analyzed, and the theistic notions are sought to be evolved from them. Such are the notions of cause and effect, already noticed, of perfect and imperfect, of absolute and relative, of necessary and contingent, original and unoriginal, infinite and finite. Clarke's argument, already referred to, though not purely *a priori*, is so to a very considerable extent. The argument of St. Anselm, for the existence of God, as given originally by him, and reproduced, with some modification, by Des Cartes, is another example. The notion of an infinitely perfect Being was assumed, either as intuitive or as necessarily contained, in our conception of the Perfect and Infinite; and since such an idea in the soul could be deduced from nothing finite, its existence was claimed as an all-sufficient guarantee of the existence of its corresponding object.

The following may be taken as a specimen of the same kind of reasoning (*a priori*): "In respect (for instance) to that *experimentum crucis*, the idea of a Personal God, it seems to me it is implicitly contained in the ideas of finite and infinite, unoriginal and original (necessary ideas),—for infinite what?—original what? Answer—Being, Existence,—of which spiritual being or Personality is not only the highest form, but the only form which is the infinite of *our* finite, the original of *our* unoriginal. In other words, if a conscious being necessarily knows itself as the finite of an infinite, the unoriginal of an original, it is a spiritual moral conscious infinite or original, which is the opposite pole of the conception. For what is it that I am conscious is bounded by myself? and if it be true that the bounded necessarily implies the unbounded, then it is a bounded self-implying an unbounded self. If any one thinks differently of the nature of the unbounded, he is unconsciously transferring the conception of the finite and infinite,

which belong to sense, to the same conceptions belonging to the spirit. Suppose a spirit, with no experience of external or material nature, or having lost them, but in the full possession of intellectual and moral truths, and the corresponding emotions, that being could not (as now) help running out of itself into the boundless, but of that boundless it could have no conception but as an intensely intellectual and moral somewhat, *i.e.* a Person.”*

It will be found that this kind of reasoning is but sparingly used in this volume, not because we think it of no value, for, in dealing with metaphysical skeptics, it may be equally necessary and effective. But it is liable to be overvalued by those who are most skillful in using it, and, being pressed too far, it often provokes unmerited resistance and depreciation from others. Butler's correspondence with Clarke† would seem to show that, to some extent, this was the effect on his mind of the latter's admirable reasoning, and that he sympathized with another of Clarke's friends (Whiston) in preferring a different line of argument. In his memoirs of Dr. Clarke, Whiston says, “When he brought me his book, I was in my garden, over against St. Peter's College, where I then lived. Now, I perceived that in these sermons he had dealt a great deal in abstract and metaphysic reasoning. I therefore asked him how he ventured into such subtleties, which I never durst meddle with. And showing him a nettle, or the like contemptible weed, in my garden, I told him ‘that weed contained better arguments for the Being and attributes of God than all his Metaphysics.’ Mr. Clarke confessed it to be so; but alleged for himself that, since such philosophers as Hobbes and Spinoza had made use of those kind of subtleties *against*, he thought proper to show that the like way of reasoning might be made better use of *on the side of religion*, which reason or excuse I allowed not to be inconsiderable.”

* Extract from a private letter.

† See Appendix to the Demonstration.

While we shall appeal mainly to Evidence *a posteriori*, we shall not confine ourselves to any one kind of it. In doing so, we should endanger the fullness and clearness of the impression which the three great Witnesses for God and Religion are calculated to make. He, for instance, who reasons only from Final Causes, and does it in the usual manner, proves thereby that there is a Designer; but he does not always, with sufficient precision, establish the fact that that Designer has free Personality and Infinite perfection. On the other hand, he who reasons only from his notions of the absolute, or who rises from finite and contingent being or substance to that which is Infinite and Eternal, is in danger of Pantheistic views. With these methods, therefore, should be combined those which are founded in our conscious personality and our moral sentiments. They furnish us, distinctly, with the notion of a Divine Personality, all-comprehending in Power, Wisdom, and Holiness; and carrying that notion with us to the study of Nature and of Man, we find in all their phenomena and laws so many attestations of its validity.

The foundation of all Philosophical Theology must be laid in a Searching Psychology, which establishes the certainty and value of our primary theistic conceptions. These being settled, we are prepared for the question as to the actual objective existence of the proper correspondents of these ideas; and the proof of that objective existence we must find in the accordance which obtains between the ideas, on the one hand, and all the facts and indications, on the other, which are supplied by our own nature, by the external world, and by all experience. To maintain that such ideas, so guaranteed, have only a *subjective* validity, and afford no vouchers for any objective truth, is to give up all hope of knowledge, and surrender ourselves to a most dismal as well as barren incertitude. They who do it, under the influence of high but bewildering speculation, constantly forget that the principle of demonstration is, from its very nature, indemonstrable, and

that the subjective necessity of believing is, of itself, a sufficient foundation for the objective certainty of Science. Forgetting this, they condemn themselves to an interminable round of questions, and confessing at last the utter impotence of the speculative reason, they renounce all faith and all knowledge; or, like Kant, they save their convictions at the expense of their logic, and take refuge in the categorical imperatives of the Practical Reason.

We ought not to conclude without reminding the reader that, in this chapter, we do not undertake to exhibit the process which minds actually take in reaching religious convictions. Our only object has been to show that there is a valid foundation for those convictions in the constitution of human nature. The origin of religious faith is one thing; its logical validity and the manner in which it can be vindicated to the reason is another. "Faith in the gods," says Proclus, a follower of Plato, "is anterior to the act of cognition, commanding assent prior to all reflection or reasoning." To believe is the fact which lies at the foundation of dialectic and demonstration. Faith is the first dictate of the soul,—the condition precedent of all action and all thought. Philosophy is the effort to make these instinctive beliefs reflective, and to demonstrate their reasonableness. This, which is true of all knowledge, is pre-eminently true of religious knowledge, and of all attempts to transform it, by reflection, into a philosophy. Such attempts, like all the attempts of speculative philosophy in other departments of thought, may as yet be mere tentatives, with but a limited measure of authority; and yet the great fundamental truths, with which they deal, may stand unshaken, and be clothed with all the majesty of a Divine sanction.

CHAPTER III.

ILLUSTRATIONS.

HAVING indicated the line of discussion which will be pursued in this work, we present a few Illustrations derived, some of them, from Nature, others from Man, and founded, mainly, on the third and fourth Principles indicated in Chapter II. In the second and third Parts, the religious instruction, which can be derived from these two sources, will be presented separately, and with reference to the leading divisions in Natural and Mental Sciences. In this chapter, *physical*, *physiological*, and *psycholgical* examples are brought together, in order to show how they mutually strengthen one another. They will be embraced under two general heads, corresponding to the two leading titles, under which all the subjects of human inquiry in the phenomenal world may be arranged—I. *Objects that exist, and* II. *Events that take place.*

Under the first, we introduce illustrations not usually employed in books on Natural Religion. Under the second, we shall insist, especially, on the *moral responsibility* under which man is placed by natural laws, and the light which those laws thus cast on the moral character of God.

SECTION I.

OBJECTS CONSIDERED AS RELIGIOUS TEACHERS.

In considering the religious instruction to be derived from *objects that exist*, whether material or immaterial, observe—

i. Their *constancy*, or, in other words, remark that they are unchangeable in their properties; whether substances are

simple or compounded, endowed or unendowed with life,—whether inspected here or in the remotest parts of the earth, to-day or three thousand years ago, they are found identical. Everywhere on the globe, pure water has the same transparency, the same taste, the same power of quenching thirst and dissolving solids; is composed of the same chemical constituents united in the same proportions, and is expanded into vapor or hardened into ice at the same temperature. So, wherever we meet opium, we find not only its soporific property, but, united with this, the same odor, the same taste, the same color, the same specific gravity, the same relation to other substances. In like manner, wherever among men we meet sensations, emotions, conceptions, they are essentially the same. The gratitude, the affection for offspring, the love of friends or country, that swells our breast now, is like that which warms the remotest heart on the globe, which animated the earliest heirs of mortality. It is so throughout nature. It is a constancy which defies alike time, the elements, man. A substance, by being incorporated with other substances, may disappear for a time; if a compound, its constituents may be separated and may enter into new combinations; but as often as each reappears, in the countless changes ever going on, so often is it found clothed in the same identical qualities.

Now, consider this fact, in itself, and also in its adaptation to our mental structure and our wants. How wonderful that, amidst all the decay and dissolution to which everything in nature is subject, we should thus find substances, formed in the same manner and with the same qualities, perpetually reproduced! Does it look like chance? And, then, how precisely, in this respect, is the world without preadjusted to the world within! The human mind is so constituted that it seems *intuitively to expect* that wherever certain of the qualities which belong to a substance appear, the rest will be found. It is a characteristic necessary, too, to enable us to

recognize objects and to use them. But for it we could not detect poisons till we had suffered from their malignant influence. Substances, though fitted to-day for useful purposes, might, if subject to frequent change, become to-morrow deleterious. The world would be a chaos, experience would cease to be a guide in action, and we should wander abroad strangers in our very homes. Was it not kind intelligent foresight that averted such evils?

2. Consider objects, again, in regard to their SYMMETRY. Water settles in drops: those drops are found, on examination, to be spherical. Vapor congeals in the air, and falls as snow: each snowflake is a crystal, or an assemblage of crystals, symmetrical in shape. The salt precipitated or the metal fused by the chemist tends strongly, in all cases, to crystallize, *i.e.* take a regular form. Five-sixths, and perhaps we might say nine-tenths, of all the minerals which the naturalist gathers into his cabinet are found, when carefully examined, to be crystalline. And when we pass into those domains of nature where life holds sway and builds up its mysterious fabrics, there this all-prevailing symmetry is still more marked. "The bodies of animals, for example, consist of *two* equal and similar sets of members, the right and the left side." It is the same with the leaves of trees. Flowers, again, consist of equal sets of organs, similarly and regularly disposed. As, for instance, the *Iris* has *three* straight petals and *three* reflexed ones, alternately disposed; the *Rose* has *five* equal similar sepals of the calyx, alternate with as many petals of the corolla.* Even irregular flowers, as they are called, are irregular merely because parts have grown together which, if separate, would render the flower symmetrical. And when we ascend to animals, including man, we find that the number *two*, which forms the basis of their corporeal symmetry, as three and five form the basis of symmetry in vegetables, is to

* Whewell's Philosophy of the Inductive Sciences.

be observed also in their instincts and habits. To adopt the language of Kirby, "If we begin at the bottom of the scale, and ascend up to man, we shall find *two* descriptions in almost every class and even tribe of animals: one ferocious in their aspect, often rapid in their motions, predacious in their habits, preying upon their fellows, and living upon rapine and bloodshed; while the other is quiet and harmless, making no attacks, shedding no blood, and subsisting mostly on a vegetable diet." One other fact, most worthy of notice, as indicating how universal and marked is this tendency to symmetry in natural objects, is the existence of *abortive* parts in plants and animals, which are yet always symmetrical,—parts which in some species exist only in a rudimentary or abortive state, while in others they serve some important office.

Now, to what are we to ascribe this prevalence throughout nature of a principle so agreeable to the eye, and so gratifying to the taste of man? We cannot answer this question better than by quoting the language of a great Botanist. Says De Candolle, when speaking generally of symmetry as indicative of design, and more specifically of abortive organs thus disposed in regular order, "If, on a subject so grave and elevated, I may be permitted to avail myself of a comparison somewhat mean and trivial, I may perhaps render my views on this subject somewhat better understood. I will suppose that I am seated at a splendid banquet, and certainly the repast which nature sets before us may well merit this appellation; I endeavor to discover what evidence can be afforded that this banquet is not the result of chance, but has been due to the will of an intelligent being. No doubt I shall remark that each of the dishes is, in itself, well prepared (this is the argument of the anatomist), and that the selection of them implies a reference to the wants of the individuals who partake of it. This is the reasoning of the physiologist. But may I not likewise observe that the dishes that constitute this repast are arranged in a certain symmetrical order, such as

is agreeable to the eye and plainly announces design and volition? Now if, on examining the above arrangement, I should find certain dishes repeated, as, for instance, in double rows, for no other apparent reason than that one might, in a manner, correspond with the other; or observe that the places which they should occupy were filled with imitations of the real dishes, which seem of no use with reference to the object of the repast, ought I on that account to reject the idea of design? So far from this, I might infer from the very circumstances stated, an attention to symmetrical arrangement, and consequently the operation of intelligence.

Now, this is exactly what happens on the great scale in Nature. Considerations derived from the symmetry of parts correct, in great measure, what is deficient in the theory of final causes, and tend not only to resolve many difficulties which present themselves in the general economy of nature, but even to transform them into evidences of the existence of this very order.”*

3. Look at *objects*, again, in their *resemblances* and *affinities*. Everything in nature has that which gives it individuality and makes it different from every other thing. But amidst this endless diversity there is, at the same time, a pervading correspondence and uniformity. Individuals are found, when compared, to have more or less in common, and can therefore be conceived and spoken of as a group, having a common designation or name. Different groups, again, have marks and attributes in common; and in this way we ascend from *species* to *genus*, from *genus* to *order*, from *order* to *class*, from *class* to *division* or *kingdom*. So pervading is this unity, so numerous the affinities that bind objects together, that the very same individuals can be classified in different ways, according as we start from one or another character as the basis of the system. As the books in a library may be ar-

* Quoted in Powell's Natural and Divine Truth.

ranged according to the subjects of which they treat, the languages in which they are written, their size or style of binding, so plants may be classified or arranged by assuming, with Linnæus, that the organs of reproduction (pistils and stamens) form the proper basis, or by holding, with Jussieu, that the basis of a more just and natural method may be found in more general resemblances and in a greater number of affinities. And it is striking proof how this community of attributes prevails in the vegetable world, that, pursuing Jussieu's method, we can arrange objects, independently, with reference either to external characters, to habits, to properties, to organization, or to functions; and whichever of these we follow, the resulting classification will be the same. So that Mr. Whewell, in his *Philosophy of the Inductive Sciences*, makes it a test of all *natural* systems of classification, "that an arrangement, obtained from one set of characters, shall coincide with an arrangement obtained from another set."^{*}

Indeed, what is human language, with its multitude of common names, its generic Verbs, Adverbs, Adjectives, and the like, but a transcript of the efforts which men have made at tracing these affinities among all the objects of human thought? With the progress of science, new ones are constantly being discovered. They are found to pervade all space, to extend through all time, to comprehend and link together all orders of beings and all varieties of substances. The planets of the solar system, for example, are all alike in figure, and in having motion, as well around their axes as through space. Fixed stars, so distant that light from the nearest of them, though traveling with almost inconceivable velocity, and though it left its bright fountain hundreds of years ago, would not yet have reached us,—these stars are like our Sun, in the light they emit, in the slight obscurations

* *Philosophy of the Inductive Sciences*, vol. i. p. 521.

they experience, in the globular form they take, and some of them, at least, in the gravitation they evince. Geology conducts us into chambers, where the dead of former worlds repose in their marble cerements, and there we find the same organs, the same functions, the same forms, often, as in living animals. Human history carries us back to the infancy of our own race, and shows us, in the slumbering tenants of an Egyptian tomb, or in the sculptured figures on an Egyptian pyramid, that men and animals were formed thousands of years ago as they are formed now.

Again, wherever animals are of the same species, they have the same instincts. Wherever men have been found, from the day that their earthly pilgrimage began, there, amid unending diversities of a minor kind, we find the same physical structure, the same mental faculties, the same moral sentiments. The similitude extends across the gulf that divides sensations even the most unlike, just as it extends across the yet deeper and wider gulf that separates the world of life and intelligence from the inanimate world. Who, for example, would expect to find any affinity between light and sound? And yet—1, they are reflected from hard surfaces according to the same law; 2, the insensibility of a certain place, in the retina of the eye, to light, has its correspondent in a like insensibility, which characterizes every human ear to a certain pitch of sound; 3, if the blending of two strong lights can produce apparent darkness, so the simultaneous vibration of two musical strings can produce intervals of absolute silence; 4, in like manner, the sensation of one bright color, seen in an object, is followed, on turning the eye to a white surface, by the sensation of its complementary color, just as the sounding of a given note on an instrument is instantly followed by those which form a chord, and are hence called the harmonics.

Consider also the remarkable affinity which both light and sound have for the same or similar emotions of the mind, and

the new ties of affinity that are thus established between them. Instinctively in all animals, but especially in man, the voice attunes itself to the state of the mind, the frame of the feelings. Joy always seeks utterance through the major key, sadness through the minor. Thus the cuckoo, at the opening of spring, when elate with health, gives forth her gladness in the major third; but in autumn, when long incubation has exhausted her strength, her notes decline unconsciously into the minor. It is to this instinctive affinity between certain sounds and certain feelings of the mind, that we owe the mighty sway which music has over the soul. The musician wields our passions and sentiments, just in proportion as he copies these natural utterances of the heart when moved to hope or fear, to joy or sorrow, utterances which are no sooner heard than they wake a corresponding chord in the hearer's mind.

But sometimes, in the hands of a great master, this noble art takes a yet bolder flight. She assails the heart not merely by representing the emotions that correspond to certain sounds, but by representing those that are awakened by certain colors; in other words, she employs sounds to imitate light and produce its effects on the mind. Thus, for instance, in the Creation of Haydn, with what matchless skill has the composer availed himself of this affinity between light and sound! "The angel begins to relate the great work; we soon come to the passage which describes the creation of Light: And God said, *Let there be light.* Before this fiat of the Creator, the musician has gradually diminished the chords; he introduces the unison and the piano still growing softer as the suspended cadence approaches; at last this cadence bursts forth, in the most sonorous manner, at the words—*And there was light.* This burst of the whole orchestra, on the resounding key of C, accompanied with all the harmony possible, and prepared by the gradual fading of the sounds, actually produces upon us, at the first representation, the effect of a thousand torches suddenly flashing light into a

dark cavern."* And again, when the artist describes how the Sun appears for the first time, "in all the pomp of the most magnificent spectacle that man's eye can contemplate:" "At the commencement of this symphony, our attention is attracted by a soft streaming note from the violins, which is scarcely discernible, till the rays of sound which issue from the second violin diverge into the chord of the second, to which is gradually imparted a greater fulness of color, as the violas and violoncellos steal in with expanding harmony. At the fifth bar, the oboes begin to shed their mellow lustre, while the flute silvers the mounting rays of the violin. As the notes continue ascending to the highest point of brightness, the orange, the scarlet, the purple unite in the increasing splendor, and the glorious orb at length appears resplendent with all the brightest beams of harmony."†

Thus it is that we have affinities throughout nature. The sap, the vessels, the leaves of plants, seem to be repeated in the blood, the arteries, the stomach and lungs of animals. The instincts and intelligence of brutes are reproduced, as it were, but in improved form and with the addition of much more exalted powers, in man; and in these natures of ours, even the mighty abyss which separates matter and spirit, those extremes of existence; that, on the one hand, which is inert, solid, extended from that which feels, thinks, and wills, in this, our human nature, even that broad abyss is bridged over; and we have ethereal spirits not only dwelling in houses of clay, but linked to them by mysterious but most intimate ties, so that matter and mind have literally become one.

Here, then, is a great fact,—the similitude which prevails among natural objects, whether those objects be material or immaterial. If all these objects be the work of one mind and one creating hand, it is the result we should expect. As

* Gardiner, author of the "Music of Nature."

† Gardiner. See notes to Life of Haydn.

every specimen of man's workmanship bears traces of the mind that designed and the hand that executed, and as in cases where one mind has produced different works, we expect to find them all pervaded by common principles and marked by common characteristics; so, if there be one great Intelligent First Cause, of whom man's soul is the faint and insignificant, yet real transcript, we should expect, in like manner, that wherever, throughout the Universe, that Infinite and Eternal Spirit expresses himself in material or spiritual works, there would be traces of his own character or style, affinities binding together objects apparently the most dissimilar. It is like looking upon a vast army dispersed over an encampment. At first all seems confusion; but, as we pass along, we see the same colors, the same fashions, reappearing in different dresses. We find here blue, there red, there green and gray. Similar colors in dress are marked by similar styles and forms, and perhaps by similar equipment in every respect. In different parts of the encampment, where certain characteristics seem most prevalent, there peculiar ensigns and emblazonments float over the tents. This repetition of the same dress and accoutrements gives us that idea which we express by the word *uniform*, and, in our imagination, we can marshal this great host into separate groups, each designated by its own ensign, costume, and weapons. Now, we cannot help ascribing such a prevalence of uniformity, in the midst of variety, to an Intelligent, personal will. Did we witness it for the first time, the inference would still be clear and irresistible that such order could have its origin in nothing but design. The suggestion that all this may be necessary or accidental, we at once reject as we do the supposition that it has been or might have been always thus. So with the world without and within. Admit that one great Being has framed and fashioned all that we behold, or are conscious of, and then these graduated resemblances, this recurrence, under circumstances the most dis-

similar, and at periods and places the most remote, of the same properties, the same organs, the same functions, is all explained. Suppose, on the other hand, that there has been at work no intelligence, no design, or that two opposing Powers, or many independent ones, have been at work, and in that case these resemblances, analogies, and affinities constitute nothing less than a vast enigma.

4. Look at objects again in respect to their *adaptations*. Whether we consider individuals, classes, or kingdoms, the adaptations are alike wonderful and manifold. In the *Individual*, part is adjusted to part,—each to its neighbor and to every other part. In animals, for example, the mouth is adapted to the teeth, the teeth to the stomach, the stomach to the viscera, the viscera to the absorbents, the absorbents to the blood-vessels, the blood-vessels to the lungs, the lungs to the muscles, the muscles to the bones, the bones to each other, and to the size, weight, and habits of the animal. And these are but the hundredth or rather the thousandth part of the wonderful adjustments which may be found in the body of the smallest animal; adjustments, too, which are in the last degree perfect and exact. “If the *viscera*,” says Cuvier, “are so organized as only to be fitted for the digestion of recent flesh, the *jaws* will be found to be so constructed as to fit them for devouring prey; the *claws*, for seizing and tearing it in pieces; the *teeth*, for cutting and dividing the flesh; the entire system of the *limbs* or *organs of motion*, for pursuing or overtaking it, and the *organs of sense*, for discovering it at a distance. Nature will have also endowed the *brain* of the animal with instincts sufficient for concealing itself, and for laying plans to catch its necessary victims.” So *constant* are these adaptations that, according to the same great naturalist, “when we find merely the extremity of a well-preserved bone we are able, by a careful examination, assisted by analogy and exact comparison, to determine the species to which it belonged as certainly as if we had the entire

animal before us." Cuvier may have sometimes pushed this principle too far; but the splendid discoveries in fossil anatomy, which he achieved by its aid, show that it has a firm foundation in nature.

If we pass from individuals to *different systems*, whether of inorganic or of living organized beings, we shall be still more deeply impressed with these adaptations, as indicative of an intelligent purpose, since they exist *between things naturally separated and independent of each other*, and the adaptations cannot be imputed therefore to any natural cause or operation. Not only is system adapted to system, but each system seems to be preadjusted with reference to innumerable other systems. Not to multiply illustrations, let us take a single case. Here is man,—observe the manner in which relations have been established between him and the whole outward world, animate and inanimate:—1. His vital functions need the stimulus of oxygen, and we accordingly find oxygen distributed around the globe, and properly diluted by mixture with another gas. He has lungs adapted to inspiring it, and an apparatus through which it is brought to act on the blood. 2. Man sustains life by food as well as air: therefore food has been provided; hands with which to gather it; skill to prepare it; teeth to cut it if it be flesh, to grind it if it be vegetable substance; various solvents to decompose it, and, by a mysterious chemistry, to elaborate from it the proper nutrient-absolvents to carry this nutriment to the arteries; arteries to convey it throughout the body; other vessels, some to seize on such portions of it as are fitted for bone, some on such as are fitted for muscle, and to convey each its load to the proper place; while, again, another distinct class of organs are employed in surrendering and carrying to the outlets of the system all material which has become useless or noxious. And so of other functions. 3. Does man need light? It comes darting towards him with fearful haste from all quarters of space, from all terrestrial objects, from the

Moon and planets, from the Sun and fixed stars. And when it comes, it finds an organ fitted to seize upon it and guide its course, to converge its scattered rays, to shut out its too intense effulgence, and to spread a surface on which, in an instant of time, it can daguerreotype a mimic panorama of all that it looks upon,—a panorama that outvies the utmost stretch of any human skill. And these impressions on the organs of sense, how do they wake up in the depths of the soul corresponding perceptions, remembrances, emotions! Or, again, does man need—4, intelligence from others framed and organized like himself or even from inferior animals? Every gesture, every natural sound, has its significance. The human face, moreover, has been written all over with signs of what is at work within; while a few insignificant bones and membranes have been so adjusted in the human mouth and throat that the most abstract conceptions of man's soul, the most tender sentiments, the most burning thoughts, can be delivered to their keeping, and straightway they are carried literally on the wings of the wind (for vibratory impulses of the air are the invisible but faithful messengers that bear them to their destination); they are thus borne, with quick dispatch, to the ear and heart of one, or to the ears and hearts of thousands. Who can trace that series of mechanical adjustments by which thought, conceived in the secret chambers of the soul, is made vocal and audible? Who can mark how the organs of utterance are adapted to the air, and the air again to the organs of hearing, without feeling that here is skill amazing and Divine? Paralyze the auditory nerve but slightly, and the great Babel becomes silent,—the voice even of familiar friendship cannot reach and stir our hearts! Paralyze the optic nerve, and all the radiance that is poured from the Sun even at noonday fails to make one feature visible on the face of those we most fondly love! On the other hand, project into the blood-vessels that lie along or around this optic or auditory nerve more than their due share of blood,

and in one case even the mellowest light of day becomes a source of agony; in the other, sounds which usually would be music to the ear seem now to torture it. And is it without design that all has been so nicely graduated? Is it but the work of some blind, unintelligent necessity? If adjustments and adaptations like these do not indicate creative foresight, if there be not here tokens palpable and irrefragable that a Creator as wise and powerful as benevolent has been at work, then let the skeptic say what proof he would have. Let him say what measure of evidence will be sufficient to vanquish his unbelief, and enable him to see in the world around him or in that within him the presence of a God.

Consider, again, how precisely *adapted to the wants and mental powers of man* are those affinities and resemblances throughout nature which form *the basis of classification*. No man can know all objects belonging to even one department of knowledge, such as Botany,—few men can learn many things. Most wise and benignant, then, is the provision which has made one object, if well selected, the *representative* of many, and has even connected different SPECIES by such resemblances and analogies that the knowledge of one is to a great extent a knowledge of hundreds. Take an example from the vegetable kingdom: “In the tribe *Cruciferæ*, consisting of about nine hundred species, the study of the common radish, the mustard, or the cress will give the student a very accurate general knowledge of the remaining eight hundred and ninety-nine, because they are all close modifications of the same forms. Again, the common potato, rightly understood, represents the greater part of *Solanaceæ*, or at least of some hundred species belonging to that tribe; while the dead nettle, *Lamium album* or *rubrum*, stands as the representative of some fifteen hundred or sixteen hundred species called *Labiatae*.” This would be of eminent importance and most pointedly indicative of Divine contrivance and goodness, though its advantages extended no further; but when it

is considered that the *properties* of plants accord also in a very remarkable manner with their *structure*, and that those which are most closely approximated in a classification most nearly resemble one another in their sensible properties, qualities, and uses, the benevolence of the adaptation becomes doubly impressive. For example, to recur to the first illustration, "any person acquainted with *Cruciferæ* would know that there is no instance of a poisonous or deleterious plant in that tribe; a point of great importance to be aware of. On the contrary, he would know that, if they had succulent roots, they might be employed like the radish, and that their leaves are anti-scorbutic; but if he met with an unknown plant, which, from its resemblance to the potato, he knew belonged to *Solanaceæ*, he would at once reject it as poisonous, or at least suspicious, unless it had tubers filled with *faecula*, when he would accept that portion, because all *faecula* is wholesome, however poisonous the trees or plants may otherwise be that produce it, provided the deleterious matter that lies among it is removed by washing or volatilized by the action of heat."* In this way we have, in the classifications of Natural History, regarded by many as empty and pedantic, a *clew* to the properties and uses of bodies; while they form conclusive evidence of that uniformity throughout nature which is the legitimate manifestation of one presiding Intelligence.

5. But we pass to the last point to be considered in respect to objects, *whether material or immaterial*, and that is their CAUSE or ORIGIN. We have already considered them in respect to their unchanging and unchangeable *properties*, their prevailing *symmetry*, their manifold *resemblances and affinities*, and their wonderful *adaptations* to each other and to man's welfare, and we have seen that each of these points distinctly to the idea of a Supreme Cause, All-wise, powerful and good. But the same conclusion can be reached, when reasoning from

* Lindley.

objects, in yet another way. Whence came these *objects*? Are they *self-existent*? If not, whence did they derive their origin? "I exist," to borrow the language of another; "I am not the author of my own existence. I ask only these two propositions to convince me that there is an Eternal Self-existent Being,—for if I be not the author of my own existence, I owe it to another being; that being to whom I owe my existence derives his from himself, or, like me, he owes it to another. If he exists of himself, behold the Eternal Being whom I have been seeking,—if he derives his existence from another, I reason about him as about the former. Thus I ascend till I arrive at that Being who exists of himself and who hath always so existed."* If, for myself, I substitute another being or substance (animal, vegetable, or mineral), from that being we shall be compelled to ascend, in like manner, till we reach the same Eternal Self-subsisting Cause; and so from whatever part of the wide universe our reasonings may start, they all converge towards the self-same centre, and rest at last in Him, who as the author and upholder of all existence must be as Infinite in power as he is eternal in duration. And such a Being must be a Spirit. We cannot conceive of a Self-existent Eternal Being, the Creator and Ruler of all worlds, as incorporated with a substance inert, extended, solid, gross-like matter. There is a sense, indeed, in which, adopting the language, though not the notions, of Spinoza, we may speak of the material universe as the body of the Deity. As we call those portions of matter, which we more immediately actuate and direct, our bodies, so God actuates by his will every part of the universe. He obscures the Sun, He calms the winds, He commands the sea. But, in the judgment of Spinoza, the universe constitutes God, the essence of all existence is his essence. Whereas the Theist holds that God *constituted* the universe, that it is pervaded everywhere by his presence and

* Saurin.

power, being entirely *dependent* on Him, while He is perfectly *independent* of it.

As an object that exists must have a cause, so the character of the object is an index to the character of that cause. Thus we reach, from considering all objects together, the idea of one common and supreme cause of all things, and we see that that cause must be purely spiritual, self-existent, and eternal. In the nature of these objects, in their fixed properties, symmetries, affinities, and adaptations, we see evidence also that this Creator must be benevolent and wise.

Nor is this all: objects in nature proclaim the *moral rectitude* as well as goodness of God. For in proportion as man is industrious in cultivating and using his own powers, in proportion as he is sober, temperate, chaste, upright, in the same proportion natural objects become to him a source of greater and greater benefit and blessing. Thus even material substances serve to show that the Being from whom they emanate prefers virtue to vice,—that his government is on the side of morality; or, in other words, judging the agent from his acts and appointments, we are constrained to infer that the First Cause of all material substances must be a holy Being, who smiles on the good and frowns on the evil. And what force and impressiveness does this inference derive from a consideration of certain *spiritual objects*,—certain instincts, notions, and sentiments in our own souls! “He that made the eye, shall He not see? He that planted the ear, shall He not hear? He that teacheth man knowledge, shall He not know?” This argument to prove the wisdom and omniscience of the Deity has the sanction of inspired wisdom. And may it not be extended? He that formed *conscience*, that moral eye of the soul!—He that planted self-respect, the sense of honor, that spiritual organ so quick to catch the sound of impending contamination,—He that gave that delicate moral tact which outruns the tardy operations of reason,—He that scourges the soul of the guilty man

with fear and self-reproach, and gives to the good man, in disgrace or sorrow, "a peace above all earthly dignities," can He be less than a Holy Being, a sin-hating and sin-avenging God? Could a Being, not holy, thus implant in his creatures instincts and sentiments to be his own reproach? And then that irrepressible sentiment which urges all men to revere and worship,—that notion so deep seated of a boundless perfection coupled with Personality,—that idea of the absolute, the infinite, and the just,—where can these find their source or centre but in a God of Infinite moral excellency and dignity?

SECTION II.

EVENTS OR SEQUENCES CONSIDERED AS RELIGIOUS TEACHERS.

We have now considered *Objects* as we find them in the material and mental worlds, and have indicated some of the religious lessons which they afford. We proceed to examine *Events* or *Sequences* from the same point of view,—we shall find that they, too, are distinguished by *constancy*, by *symmetry*, by *affinity* or resemblance, and by numberless exact and beautiful *adaptations*.

1. CONSTANCY.—Objects, whether material or immaterial, are rarely stationary. The universe is full of changes or events. They occur in all directions and under innumerable forms; and yet, in the main, they are constant and orderly, moving forward in what for practical purposes may be regarded as unvarying succession. Though the series seem to cross each other at every point, and each one is complicated by many conditions, yet there is no widespread chaos, there is little of conflict or confusion. Wherever the same concurring antecedents present themselves, the same consequents follow. Thus a true history of the past, in man or nature, becomes in one sense a clear prophecy of the

future. Man seeks, according to Bacon, to interpret Nature that he may serve her, and he serves that he may master her. He literally stoops to conquer, humbles himself that he may be exalted. The movements of the universe for the future can be divined only by ascertaining her operations in times past; and her mighty energies can be enlisted in man's behalf only in proportion as he understands and respects their peculiar properties and modes of acting. Were not natural sequences substantially fixed and uniform, it would be impossible either to foresee them or to render them to so great an extent subservient to man's welfare.

2. SYMMETRY.—As this is a marked characteristic of objects, so it is also of sequences, whether physical or psychological. Look at the waves of the sea as they roll in succession to the shore and crest themselves into beautiful wreaths just as they break and disappear. Listen to the solemn cadences of the winds or waterfalls, or to the deep murmurs of the ocean, nature's great orchestra. Look at the counter-currents of clouds, moving in silent harmony along the sky, and that constant recurrence of motions, progressive and retrograde, among the celestial orbs, which suggested to the ancients the idea of music among the spheres. Look even at the alternations of heat and cold, rain and sunshine, wind and calm, regulated at first sight by no law, yet serving as variations in the universal anthem, or as shadows on the vast picture of nature. Look at currents of vapor ascending from the earth, redressed by the descent of equal quantities of rain; and the sea yielding to the land, through evaporation, just as much as it receives back through its countless tributaries. Consider opposite and equal polarities in Magnetism and Electricity, and the attractions in all matter counterbalanced or restrained by equal repulsions. Consider action in mechanics, always set off against an equal and contrary reaction; and that play of affinities in chemistry, where opposing energies seem ever ready to rush together, and, like opposing

hosts in war, lay in strife a foundation for future union and concord.

We trace this principle of symmetry everywhere. The vital fluid generally circulates in counter and equal currents; matter acts on mind, mind on matter. The selfish passions are counteracted by the social, imagination by reason, prudence by conscience, impulse by deliberation. The intellect reasons by induction and by deduction,—conscience decides by instinct and by reflection,—memory reproduces spontaneously and also by voluntary effort,—imagination sports in airy fancies or combines with reference to the actual and the intended. Thus throughout nature we have harmony of correspondents or opposites. At one time union by original similarity and agreement, at another the product of conflict and strife, yet in each case tending to ultimate equilibrium in the material and moral worlds.

3. RESEMBLANCES AND AFFINITIES.—That this is a characteristic of sequences or events in the natural and moral worlds must be obvious to the most uninstructed eye. We need, however, the powerful glasses which Science supplies in order to discern more adequately the order and economy of the system to which we belong. They enable us to distinguish between the fixed and the casual, and they reveal to us those more latent, yet often more essential, affinities, which bind together phenomena apparently the most unlike.

Consider, then, the process of classifying and generalizing facts, which is the foundation of all safe induction in Science. It shows that the resemblances and affinities which we have found characterizing *objects* are equally characteristic of *events*. Gradually we learn to distinguish between cases of casual juxtaposition and those of stated and permanent succession. Different sequences, which are ascertained to be fixed, are then compared, and are found to have more or less in common. Ever bent on simplifying his view of phenomena, and finding unity among all the objects of thought, man thus

pursues, in respect to events, the same course as in respect to objects. He gathers them into distinct groups, and the characteristic mark of each group being enunciated in language becomes *a law*. And as in classifying *objects* we ascend from species to genus, from genus to order, and thus onward, so it is found in generalizing facts we can mount from those less comprehensive to those more so, till we reach some wide and far-reaching principle, which seems to prevail throughout the universe, and stand as the type of one Infinite mind.

Such a principle, in the material world, has been brought to light by the genius of Newton. It remains for subsequent inquirers to unfold, in the spheres of physiology and psychology, principles corresponding, in their simplicity and comprehensiveness, to this law of gravitation,—principles which shall be found to regulate all the functions of organized substances and all the varieties of mental activity. And even when this shall have been accomplished, we know not that the work of generalization will be completed. The great mathematician, La Grange, is said to have looked with sadness upon what he termed the good fortune of Newton, “because,” said he, “the system of the world can be discovered but once.” But is this so? Has Newton exhausted the subject? Has he reached the last and highest generalization? Even in the material universe, is there not reason to anticipate that agents like heat, electricity, and magnetism, once regarded as independent both of each other and of gravitation, may all be found at last, in common with gravitation, to be but modifications of a single principle still more comprehensive? Or, again, is it altogether incredible that, in the progress of future discoveries, there may be unfolded some principle or analogy of still wider generality,—one that shall be found to extend alike over matter, over organized life, and over mind; that, as all these have been united and blended in one being, Man, so it may be found that one great idea or archetype

stretches its sceptre over all the countless and diversified phenomena that occur around and within us?

The lessons which Science now reads, respecting the order and harmony of the universe, are poor and meagre when compared with those she is destined to read hereafter. In some departments she has only just begun to unfold the vast volume, which will be found inscribed throughout with evidences of Eternal Power and Godhead. Who doubts that she is to advance in this work with accelerated speed? All that she has achieved heretofore only fits her for deeper researches, for bolder tentatives; and who shall say that, in her future career, she is ever to reach a point where it can be truly said, *Thus far shalt thou come and no farther?* Subjects there may be which must, from their very nature, be forever inscrutable to our view, because they have been placed beyond the ken of intuition or consciousness, of observation or analysis. But within the limits prescribed for the application of these means of investigation, who does not feel that an inexhaustible world of truth spreads out before us; and that however high the intellect may soar, or however deep it may dive, or however far it may wing its untiring flight, it will leave an immense expanse still unexplored, so that there will be full employment for all its powers throughout an endless duration? Infinite truth, and a mind that has illimitable and insatiate cravings for its light, do not these point towards a source at once Infinite and Intelligent?

And then consider the manner in which future discoveries are to be achieved. It is by employing, with sagacity and unyielding industry, all the discoveries and inventions of the past. We know more than our ancestors, because, as Bacon said, we are older than they. To our brief term of life we add the sum of all theirs who have toiled successfully for the instruction of mankind in past time, and who have bequeathed to us the fruits of their toil. They and we look on the same face of Nature. They and we thread our way through laby-

rirths under the guidance of the same assumed principles. However dissimilar the case, which we examine from any yet discovered, we still reason from the known to the unknown, assured that one general system, one unique and characteristic style, prevails throughout the universe, and that undiscovered truths will be found crowded with analogies and resemblances to those which are already discovered. And this assurance, what is it in truth but the assurance that that Being, who is the source and centre of all worlds and all events, is never inconsistent with Himself, and sends forth therefore no works that are essentially incongruous? These instinctive assumptions of analogy between all truth, discovered and undiscovered, are sometimes abused; but the fact is incontestable, and it is one which seems to us full of significance.

4. ADAPTATIONS.—In surveying sequences or laws, we may consider them both in their adjustment to each other and in their adaptation to the welfare of our race and of all terrestrial beings. These sequences are independent of each other. Mechanical and chemical changes would go on though there were no life on the earth, and plants and animals would *live* though there were no men. Here, then, are four independent worlds, each interpenetrating and being adapted to the rest. The soil, air, and water yield nourishment to vegetables,—vegetables sustain animals,—animals are food for man. A poisonous gas is given out by animals in respiration; it is snatched up by plants as necessary food, and as if to save man from its deleterious effects. Light and heat are essential to the vegetable and animal worlds. Great magazines of each have been provided and stationed throughout all nature. Each is propagated in virtue of its own intrinsic buoyancy, and the atmosphere is so formed that each passes unobstructed throughout its whole extent. So in the mental and moral worlds. How admirably perception is adapted to judgment, and both to memory, and all to imagination!

How the passions and emotions are adjusted in respect to the intellect, and all subordinated to conscience! How habit is connected with voluntary action, and both with passive susceptibilities! How the selfish and social affections conspire to promote both the happiness of the individual and the welfare of society! And even when we compare the physical and moral worlds, we find that they are not without their mutual fitnesses. Impressions from external objects rouse the dormant intellect and quicken the sluggish sentiments. They inform us of what exists and transpires without; and muscular motion, directed by intellect, enables us to react upon this outer world, and to modify both its objects and its events. Earth yields her increase only to labor, that promotes health and develops intellect; and man, who does not live by bread alone, finds that in elaborating from the raw material, furnished by nature or provided by art, the fabrics which are to warm and decorate his person, or the edifices which are to shelter him from heat and cold, he is at the same time laying the foundation of laws and civilization, and contributing to improve himself, his neighbor, and the world.

(a) But, to be more particular, consider first PHYSICAL SEQUENCES or LAWS. Take, as an example, the law that bodies expand or contract in volume according as they are more or less heated. This law is pregnant with blessings throughout nature. Suspend it and no water would be converted into vapor, no vapor would be condensed into showers, no currents of air from colder regions would flow in to temper our too fervid summer heat; nor in the winter would milder breezes from the warm and sunny South come to allay the fierceness of our cold.

The very *exceptions* to this law are full of benefit to man and to all living creatures. Water, in passing below forty degrees of Fahrenheit, ceases to contract, and suddenly expands, so as to render a given volume of water larger when frozen than when in its liquid state. Now, mark how this

very exception to a great and all-comprehending law is introduced, as it were, on purpose, and adapted to produce the utmost good. It renders ice specifically lighter than water, so that it floats upon the surface instead of sinking to the bottom, in successive layers, till the whole of the stream or lake being congealed into one solid mass, no summer's sun would suffice to thaw it out. Look, again, at the effect of this exception in the case of rocks. Expanded by heat, their pores and fissures are thrown open to water, which insinuates itself into their interior, and then, when winter comes, this water, being frozen, expands, and like a mighty wedge splits off great fragments, as well as lesser portions, and thus contributes to that rapid disintegration of rock which is necessary to replenish a soil constantly wasted by the flow of streams bearing its minutest particles towards the ocean.

In addition to the agency of this expansive power of heat in the atmosphere and on the surface of the globe, there is every reason to believe that it is the same principle, in the form of central heat within our earth, which, from time to time, heaves up islands, continents, and mountain chains, and thus exposes, for the use and benefit of man, those great layers of mineral wealth which would otherwise be inaccessible, and which are rich in contributions to human welfare. The same cause probably occasioned those violent eruptions of the sea, sweeping over whole continents, of which we have striking traces in immense boulders of rock removed far from their parent seat, in deeply worn channels, and in widely scattered drift.

But we do little justice to the wisdom and benignity of these adaptations unless we look beyond nature to art. Every established sequence is useful, in the ordinary course of events, when undisturbed by man. But its usefulness becomes ten-fold more apparent when we consider how industry, guided by knowledge, can reproduce these sequences, or can divert them from their natural channels, in order to make them

obedient and all-bountiful agents of specific good to man. Thus, with the law we have just mentioned, the wheelwright, by means of the expansive power of heat, binds on his tire, the founder rolls out his iron, the architect braces up his walls, the servant kindles and maintains his fire. But above all, the steam-engine—second only to the printing-press as a mechanical benefactor to mankind—is but a means of applying to man's service and benefit this simple law that heat expands bodies.

And so with every physical law: it goes forth through all nature working countless benefits. But it goes also offering a perpetual challenge to man's ingenuity, industry, perseverance, justice, and love of happiness. It says to him, "Here am I ready to be yoked to your triumphal-car, and to contribute to your dominion over nature; here am I ready to toil in raising your food, fabricating your raiment, rearing your edifices, building your roads, spanning your rivers, cheapening your knowledge and bearing it to and fro with the velocity of the winds; but, then, you must study to know my nature and properties. You must tax invention that those properties may be employed aright; you must use vigilance in superintending my toils; and you must see that peace and justice reign, so that my products may be dispensed abroad, and may carry comfort and happiness to the remotest hamlets of your own and other lands. I will be your patient slave and benefactor, but only on conditions. You must serve a probation of inquiry, research, experiment, till you establish a right to me; and that right you can retain, in its highest perfection, only so long as you pay some heed to the great moral law that enjoins industry, foresight, self-restraint, and justice."

What is true, then, of the law that heat expands bodies is true of every physical sequence. In the order and economy of nature each is a source of blessing; but each becomes yet more fruitful in such blessing through the art and industry

of man. Indeed, the *useful arts* are but the application to specific purposes of natural laws and properties. In proportion as these laws are comprehended and respected, just in that proportion does industry triumph over difficulties and achieve advantages, economizing time, saving labor and material, and at the same time improving products. Thus every law in Physics and Chemistry summons man to study that he may understand, and to understand that he may employ it. Benefits and blessings unnumbered he receives through these laws without intervention of his own; but it must awaken our gratitude and admiration that he has it in his power to augment these benefits, almost without limit; that he is not left to be a mere passive recipient of the good he enjoys, but is called to study these agents and prime movers of nature to co-operate with them, to guard against the incidental evils they may occasion, and thus to enlarge and multiply his physical enjoyments by the very means that develop his intellectual and moral powers. What, indeed, can be more indicative of Infinite Goodness, Wisdom, and Holiness than the fact, too little considered, that, on the whole, the improvement of our physical, intellectual, and moral condition is one and, in some sense, indivisible; that man cannot advance the useful arts without enlarging the range of human knowledge and thought, and thus adding to the moral as well as to the physical resources of his race; and that no individual can ever practice one of these arts unless he observes some of those higher laws that tend to refine and exalt our whole being?

(b) It is the same with INTELLECTUAL LAWS. Take, for example, the law of *Suggestion* or *Association*, by which one thought in the mind always leads to another somehow related to it,—the relation being sometimes casual, sometimes real and philosophical. How manifold the blessings of which this law is the agent and minister! It keeps the mind always peopled with objects, though ever so much bent on idleness and vacancy. Through those objects it holds out lures to in-

quiry and reflection, perhaps also to action. It carries us back, even against our will, to the past, with its remembrances that ought to excite shame and amendment, with its lessons of dear-bought experience, with its stirring notes that warn of danger or animate to duty. It bears us onward in thought to the future, and sketches all the probable and possible of our coming destiny, or it conducts us towards the borders of unknown truth, and invites us to investigate and to reflect. It invests every object and event with hues borrowed from abroad; and thus it contributes, if the mind be well regulated, the life innocent and useful, and the faith heavenward, to gild with sunshine all our way through this earthly pilgrimage.

Here again we find that the law becomes doubly useful when understood and applied by man. In the hands, for example, of the Painter, the Poet, the Orator, the Dramatist, the principle of *Suggestion* or *Association* is a wand of enchantment, which he has but to wave aright and images of beauty or tenderness, of terror or mirthfulness, of sublimity or meanness, come thronging before the mind. As the *useful arts* consist in applying physical laws and properties to the purposes of man's subsistence and comfort, so the *liberal arts* are methods which have been invented of applying psychological laws to the higher purpose of convincing the understanding, of awakening the imagination, of moving the affections and passions, of gratifying the taste or regulating the life. And as in the Fine Arts, so also in the education of the young, in the culture and development of his own nature, in all the intercourse of life, when he would apply influence to others or dispense happiness as he moves abroad; everywhere, in fact, there is occasion to employ these intellectual laws, and benefit or injury will attend our steps and attest our agency according as we employ them well or ill, understanding or mistaking their true nature, using or abusing their almost boundless influence.

(c) So with MORAL LAWS. Take, for example, the great law of forbearance and forgiveness. This law bids us, instead of retaliating or merely punishing an injury, to overcome evil with good. It requires us to place ourselves in the attitude of a friend and benefactor towards the injurious; and even when we inflict punishment, to do it in the spirit of kindness, while we extend not a cold forgiveness only but active benefits also. Slow as mankind have been to understand and apply this law to social and civil relations, there are places where it has always asserted its authority. In all ages of the world, and in all states of society, a parent's heart has owned it with an instinct which outstripped every deduction of logic as well as every mandate of authority. How many millions of mothers, who never heard of the great law of love, nor of that matchless illustration of it which was presented in the life and death of Christ, have still toiled long and patiently for a thankless and deeply offending child! Not only without being distinctly recognized by men, but, we might almost say, without their intervention, this law has still wrought out blessings! Many a child owes to it a care, which he long since forfeited by his misdeeds,—and to care, so bestowed and persevered in, when all was provocation, how many a child owes it also that his heart has at length been touched with compunctions of remorse,—and he has been brought back an humble prodigal to a parent's fond embrace! What stripes could not effect has been achieved by the deep devotion, the exhaustless forbearance, of one whose love could outlive and outlabor all perverseness and ingratitude. And not in the parent's heart alone has God set up this sentiment to be his own representative. Often has the meekness and patient assiduity of a son or daughter—continued when all in return was unkindness or injustice—melted down the obduracy of a profligate and unprincipled father. Often has the wife, hoping against hope, toiling on amidst neglect and contumely and deep wrong from him who was pledged to cherish and pro-

tect her,—how often has this, her return of good for evil, fallen like coals of fire upon the transgressor's head, and subdued him at length to repentance and a better mind!

Thus has a mighty, unreflecting instinct achieved in the domestic circle what reason and deliberate effort only can accomplish elsewhere. When we deal with convicts in our prisons, with sots in their debasement, with females lost through licentiousness, above all, with those who have wronged, defamed, or insulted us, we have then no all-powerful instincts urging us to forbearance and love. Then we can appeal only to the energies of our higher nature, and must impose, through the stern mandate of the will, a restraint upon our passions. Hence we, too often, give way to moral indignation, and visiting offenders only with retribution or retaliation, we rouse resistance and fortify the spirit of transgression, when we may have only aimed to awe and to subdue. It is since we learned to enter the prison-house with a parent's heart, with something of the forbearance of an injured wife,—since, with intense displeasure at the sin, we have come to couple and to manifest cordial good will and compassion towards the sinner,—that we have begun to triumph over the spirit of stout resistance which once reigned there, and have converted the reformation of criminals from a mere dream of Utopian philanthropy into a heart-cheering fact. Thus, then, do *moral laws* become sources of blessing in proportion as we understand and apply them. *Useful arts*, as we have seen, are the *application*, by man's intelligence, of *physical laws* to *useful purposes*, just as the *liberal arts* are the *application to corresponding* but higher purposes of *psychological laws*. But here we have another class of arts which might be termed *moral arts*, and which, in their manifold operations, are but so many adaptations, made by man, of the Creator's moral laws in order to advance human welfare.

We have thus dwelt upon laws, or sequences, as adapted in a twofold respect to display the divine wisdom and goodness:

first, as they conduce, of themselves, to the enjoyment of men and animals ; and secondly, as their natural utility admits of indefinite increase through the agency of man. The last is a view not often dwelt upon in books ; but it is one which can hardly fail to suggest itself to a thoughtful mind in this day of victorious industry, rendered yet more victorious a thousand-fold through the application of science. Aided by a knowledge of natural laws, labor is constantly augmenting the means and appliances of human welfare, and thus a boundless field spreads out before us, where man, in achieving new triumphs for himself, unfolds new views of a wisdom which could foresee, and a kindness and power which could provide for such a progress. The very difference, in this respect, between man and animals, how indicative of infinite goodness ! Animals, from the first, avail themselves with unerring precision of those properties in bodies, and those mechanical and chemical laws, which affect most nearly their well-being. Man reaches this accuracy only after many mistakes ; but, then, in reaching it, what stores of experience does he not gain, and what developments does he not give to those intellectual and moral powers which form his glory here, and which, if duly improved, are to be his crown of honor and rejoicing hereafter ! Animals, left from early infancy without parental guidance, and devoid of that discourse of reason which looks before and after, need intuition and unerring instincts. Man, on the other hand, endowed as he is with this high faculty ; placed, too, for years under pupilage, and destined for an endless future, in which character is to determine condition, and previous voluntary acts and habits are to determine character,—man needs to be placed on probation even in respect to his physical powers, and to reach the perfection of his lot only through a painful but instructive path, that taxes all his energies, but which, if duly trodden, renders every effort subservient to the exaltation of his nature and his condition. Thus, again, in this admirable adaptation of our state to our

mental conformation and to our ultimate well-being, does the Most High give us assurance of his parental care.

Is it said that this regularity of sequences, with its adaptation to useful purposes, may all be imputed to a necessary connection between the successive terms in the series and between them and the ends attained,—as in plants, the various parts may be regarded as the natural and necessary development of one common principle or organ? Admit for a moment (to adopt this example) that the modern doctrine of a metamorphosis of organs in Botany is true; suppose that all parts of a plant can be traced back to one common type, and be viewed as different developments of one rudimentary organ, such as the leaf: still, the manner in which these different parts are modified, so as to correspond to the several purposes they answer, furnish most impressive evidences of design. There is, however, much more than this. You hold in your hand a flower. Concede to the morphologist that the beautiful petals of the corolla are but leaves reduced in size, thinned and colored; concede that the stamen is a leaf whose petiole is represented by the filament, while the two lobes of the anther are the two sides of its lamina; concede that the pollen is disintegrated mesophyll, and so on,—nay, concede, what few philosophical botanists would demand, that the wonderful manner in which this rudimentary organ is metamorphosed, so as to answer with precision so many and such various purposes, proves nothing of creative foresight, but all may be ascribed to a necessary law: still, how much remains to be explained! On tracing down the stalk from which that flower was plucked, you find that its roots and root-fibres are adapted to the double purpose of giving firm footing in the soil and of absorbing from it different substances, solid, liquid, and aeroform; that it has organs fitted perfectly for the circulation of those substances, and for their conversion into different parts of the plant; that the size and weight of the flower correspond to the size of the stalk, and the whole together to the

strength and stability of the base, and all these again to the size of the earth. We observe, again, that while the roots are thus admirably adjusted with respect to the earth, the leaves are no less admirably adapted to the action of light, of air, and of moisture. That light, for example, not only serves, as it falls on the leaf, to rouse its dormant energies and quicken the process of vegetable assimilation, but that it is reflected from that leaf to an eye so formed as to derive pleasure alike from the color and the form ; that the odoriferous particles of the flower again seem to have been constituted with reference to the air through which they pass, and to the sensitive organ on which they fall. And lastly, we observe that all this external and material mechanism corresponds, in a manner the most wonderful, to the spiritual principle within us ; that one glance at this flower, with one sensation of its fragrance, is enough to awaken pleasure in the deepest depths of the soul ; that it can carry the thoughts, as if by enchantment, far away from the present to some paradise of happy memories or of fancied delight,—to the garden where we roamed in childhood, to some island of the blest, the creation of poetry, or to that fairer scene, where

“Airs, vernal airs,
Breathing the smell of field and grove, attune
The trembling leaves, while universal Pan,
Knit with the Graces and the Hours in dance,
Led on eternal Spring.”

In all these adaptations between substances so independent, so dissimilar, resulting in effects so beneficent, who does not see the hand of a Being as wonderful in counsel as He is mighty in working? Exceptions there may be to the beneficence of these results. Instances rare, but yet indisputable, in which disorder rather than order seems to reign. But who does not feel that these are but as the dust in the balance, and that they serve as shadows to set off the transcendent bright-

ness of that great picture which God has given us in Nature of his own boundless Perfections?

It is with *Events*, then, as with *Objects*. By their constancy and symmetry, by their affinities and adaptations, both point towards an Intelligent First Cause, and supply innumerable indications of his wisdom, benevolence, and holiness. Both, also, carry us to the same conclusion, if we consider them simply in their *cause* or origin. We saw, in the last section, that, in reflecting on *objects*, the human mind is constrained to ascend from one to another cause or ground of their being, until it rests at last in the idea of a self-existent, eternal, and personal Creator; that this idea is not so much extracted from objects as assumed in order to render them intelligible; that, like the ideas of space and duration, it seems inseparable from the natural operations of the mind when applied to phenomena, needing observation merely to develop, not to create it. It is the same with events or changes, whether mechanical or chemical, intellectual or moral. You see a stone fall to the ground: you ask the cause,—the answer is, gravity. The mind instinctively asks, whence is gravity? We are told again that many geological facts can be referred to the action of subterranean heat breaking forth in earthquakes and volcanoes,—can we help asking whence that subterranean heat? So with every series of effects and causes. The mind ascends intuitively from instrumental to efficient, from proximate to ultimate agency, from second causes to a First Cause. As we cannot help interpreting the adaptations and order of such a series by the consciousness of purpose and design which we carry in our own minds, and therefore feel obliged to ascribe it to intelligence; so the consciousness of power which we feel in our own souls, and the manner in which it originates changes, constrains us to ascend to the notion of a self-existent and almighty Power, the cause of all things. The skeptic may affirm what he will of the impropriety of raising such questions, and of the futility of all answers to them. The mind

that thinks cannot help considering them. It is so formed that it can never rest content with mere sequences, however generalized. The notion of a Supreme Being, therefore, seems necessary to us; and the skeptic achieves literally nothing when he succeeds in showing that second causes may have been the immediate occasion of that which we have been accustomed to ascribe to the direct act of a First Cause.

It is known to many of our readers that modern science, in the hands of some of its disciples, has suggested the idea that the earth, and all that it contains, instead of springing immediately from the fiat of a Creator, may have been but the gradual development of a mighty germ of existence, beginning, according to the nebular theory of La Place, with the condensation of nebulous matter in the heavens, which finally contracted into a solid globe by cooling; that from this globe there arose, in due time, by the agency of chemical, mechanical, and other inherent laws, the simpler forms of vegetable and animal life; that from these rudimentary forms sprang in succession other and more perfect, as well as more complicated, varieties, until at length man,—the lord of this lower world, with all his affections, his moral sentiments, his intellectual powers, his unquenchable desires, his capacities for illimitable progress, his irrepressible energies, that go forth exploring worlds of undiscovered truth, and levelling mountains of practical difficulty, and when they have done it all still pine for other worlds to conquer,—man, the last of these developments, steps forth, not the immediate workmanship of God, but the necessary result of powers and processes that have been at work for millions of years or ages.

Need we say that these are the mere suggestions of adventurous speculation? No man of science will pretend, though the testimony of the Bible be set aside and they are weighed by inductive philosophy alone, that, even in such cases, they can claim for their support more than the slimmest probability. But admit that the theory is true: is that a legitimate conclu-

sion which is drawn from it? When sages explained the stability of the earth by poising it on the back of an animal, the inquirer naturally asked—he could but ask—on what the animal itself stood. Suppose, then, with La Place, “the sun’s atmosphere expanded by heat did reach the limits of our system, that it gradually contracted in cooling, and that during the revolution of this immense system of vapor round the sun’s axis the Georgium Sidus, Saturn, Jupiter, Mars, the Earth, were gradually thrown off from it into their present orbits, and with the velocity of the atmosphere of which they formed a part, that they contracted into solid globes by cooling, having previously in their turn thrown off their satellites; and that the characteristic circumstances in the system thus found, which produce stability, are the necessary consequences of this mode of formation.” admit, too, with Lamarck and other French naturalists, that the earliest and simplest forms of organic life started spontaneously into existence; and that all other forms sprang from these, in virtue either of appetencies or of an intrinsic law of development: have we thereby explained the system of the world? Have we eliminated from our great moral and physical equation the unknown quantity—God? “Who created or planted a sun in the centre of what was to become a system of future worlds? Who supplied the due portions of heat to expand his atmosphere through that region of space in which it was to deposit the future abodes of life and intelligence? Who added the rotary impulse, and adjusted it to that precise velocity which would throw off planets revolving in harmonious stability, in place of comets wheeling in eccentric and unstable orbits? By what power was that heat withdrawn, so as to permit the zones of the solar atmosphere to contract successively into solid planets? Who separated the ‘light from the darkness’ which brooded over the revolving chaos? Who gathered into the ocean’s bed its liquid elements?” And if plants, animals, man, rose successively and spontaneously into being,

who impregnated the materials out of which they were made with their mysterious power, and who superadded the instincts, the affections, the thoughts, the aspirations which we find in man? Go back as far as we will, we still need a Power to begin the work of creation. From an eternal succession of secondary causes the mind instinctively recoils. It finds rest only in the conviction of a First Cause, and from that conviction, whether it be a cause collecting all its creative energies into one single act performed millions of years ago, or whether it be a cause manifesting itself from time to time before its intelligent creatures in new efforts, it is, in either case, a conviction, without which our views of the universe are fraught with darkness and confusion, as well as with despair.

Whatever the train of causes and effects, then, which we trace, whether they be physical or psychological, whether they pertain to matter or to mind, to unorganized or to organized substances, they tend in each and every case towards the conception of a Great First Cause. And I need hardly add, that these different lines of sequences are converging lines,—they point towards one and the self-same origin. He who produced the earth and its atmosphere,—must He not also have created the plants that grow upon it, the animals fitted with organs to subsist upon those plants, the lungs that respire air, the organs of articulation and of hearing that make air audible, the mental faculties by which language is rendered possible to man? And if those faculties came from one Being, then why not all other mental faculties, since all others are adjusted to these? And are we to think that the Being who gave such faculties, gave them for no purpose,—or that his purpose could be other than “to guide and elevate man in his present career, and prepare him for another state of being to which they irresistibly direct his hopes”?* Thus does the argument from causation, combined with that from final causes,

* Whewell's Philosophy of the Inductive Sciences, v. ii. p. 164.

conduct us at once to the notion of the Divine Unity and of man's immortality!

Here, too, we employ, in respect to sequences or events, another argument, which, in the last chapter, we founded on objects. As events must have a First Cause, so the character of the laws which regulate them indicates the character of Him in whom they have their rise. His Wisdom, Goodness, and Power have been so often referred to already, and are discussed so copiously in all works on Natural Theology, that we only notice here another class of attributes too apt to be overlooked. We mean the moral attributes of the Deity, his Justice, Veracity, and Holiness. In some of our most popular and justly valued works—such as Paley—these attributes are not even touched upon; nor, in Paley's case, perhaps, is it surprising, since a philosopher who resolves all virtue, in man, into utility, can hardly avoid, if he be consistent, resolving all Holiness, in God, into Benevolence. But it is surprising that writers who appreciate the independence of these two qualities in our own nature, and who distinctly recognize the moral perfections of the Deity, should have dwelt so little upon the impressive lessons which even nature teaches respecting the Holiness of Him with whom we have to do. It is worthy of remark that such lessons are to be deduced not merely from our own moral constitution, and from the results and tendencies which we see attached to different courses of conduct under his providential direction. If we study even physical, organic, and intellectual laws with reference to this point, we shall find that they too, as I may show more largely hereafter, point distinctly towards a moral character in God, and admonish us continually that this God has declared himself the friend of Virtue,—the unrelenting enemy of Sin. It is a view which needs to be more and more insisted on, in proportion as Natural Science engrosses a larger share of attention. The tendency to confound God and Nature, to identify Him and the energies or laws through which He acts,—a tendency to

which the human mind is always somewhat subject, and which is apt to be strengthened by a Philosophy too exclusively inductive and empirical,—this will be increased in proportion as the moral perfections of the Deity are overlooked. The consideration of these is needed to recall us to a deeper sense of the Divine Personality, to remind us of our own spiritual freedom, and to warn us against all those outward influences which war upon our welfare, obscuring our perceptions of God and accountability, and quenching our aspirations after a better and nobler life.

We have thus sketched a few Illustrations of the light which OBJECTS and EVENTS, properly considered, cast upon the great truth that God is, and that He is the rewarder of all such as diligently seek Him. To attempt to fill up this outline will be our business hereafter. One word, in closing, on the use and defects of Natural Theology, and on its relations to the Religion of the Bible. By unfolding the wonderful order and the benevolent adaptations which are more and more evident as Science widens our view of nature, the Religion of Nature leads us to recognize more distinctly the presence and Perfection of the Creator. When we see how, by patient observation and induction, Philosophers succeed in grouping a vast number of apparently incongruous facts under one simple principle, Natural Theology causes us to raise our thoughts to that Presiding Intelligence which has thus spread harmony over all his ways, and connected by indissoluble bonds bodies and changes the most remote and dissimilar. And when, from the contemplation of the law, we turn to some of the countless uses to which it can be applied, when these various uses rise into view, and we see how all things are made to work together for the promotion of happiness or virtue, here, too, Natural Theology causes us to look with thankful and adoring thoughts to Him who originally ordered and now sustains a system so fraught with blessings.

If Science is mute when she reaches those lofty eminences

whence she can look forth on all comprehending laws and generalizations, Natural Theology takes up the strain, and gives it a higher and more solemn significance. She does not suffer us to dwell on the constancy of these laws in such wise as to dream that it results from mere necessity. She does not substitute Nature for God, an unalterable succession for the agency of Him who is both Creator and Ruler of the universe. She teaches us, with Bacon, that we ought sooner to "receive all the fables of the Legend and the Talmud than to believe that this universal frame is without a mind." That though "a little Philosophy may incline men's minds to atheism, yet depth in Philosophy bringeth men's minds about again to Religion; for while the mind of man looketh upon second causes scattered, it may sometimes rest in them and go no further; but when it beholdeth the chain of them confederate and linked together, it must needs fly to Providence and Deity."

But Natural Theology has a yet higher office. "Philosophy," says Clement of Alexandria, "was to the Greeks what the Law was to the Hebrews. It was a schoolmaster to bring them to Christ." If this can be said of Philosophy, how much more of Natural Religion! Teaching us the existence and superintending agency of God, it teaches us also that there are problems in respect to his government and our own destiny which are of infinite moment, but which no oracle in Nature's Temple can adequately solve. It teaches us that there is a God that hideth himself. With the Patriarch of old, we would find Him, we would come even to his seat, we would know whether He still looks down upon us with a Father's eye and heart. Some token we would have, from that dark immensity over which we hang, that we are not forgotten by the Infinite and Eternal Spirit, that we are not left to be the sport or unresisting victims of inflexible law; some token that amidst all the dark dispensations of life, amidst the prosperity of the wicked and the triumph of the ungodly, there is still a God that judgeth the earth, and that He is an unfailing

Refuge to all who trust in Him. And then, when the moral eye looks inward, when we contrast what we are with what we ought to be, when we hear the deep witness of our own soul that God is just, and that we are unjust, do not the almost agonizing questions rise, Is there mercy? Can there be mercy for such as we? And to these questions, what has the Religion of Nature to answer? What but the *intimation of a hope* that He who has given to man some light will not withhold more, that the very insufficiency of the Revelation made through Nature and Providence is a sort of pledge that clearer and more consoling communications are in reserve for his erring children? And when, with these words of doubtful promise, the inquirer turns towards the manger of Bethlehem, the hill of Calvary, the rock of Joseph, the Mount of Olives; when he compares the instructions of Him who spake as never man spake, with what he knows already of God, and suspects of immortality and judgment; when he places the grace that is promised and the grace that is provided beside the yearnings of a deathless but benighted and sin-stricken spirit, does he not know, does not the Religion of Nature proclaim, that here is a Teacher sent from God,—the true light that enlighteneth every man that cometh into the world?

CHAPTER IV.

CRITICAL DISCUSSIONS.

IN the preceding chapter we presented the Order and the Adaptations that prevail among Objects and Events, as indicating a Creator who is all-Powerful, Wise, and Good. In doing so, we contravene the judgment of acute and able men, some of whom incline to Atheistic or Pantheistic views, while others are believers in Theism. Their objections, then, to the Religious Instruction which we have sought to draw from these sources, we shall now consider.

We shall also call attention to views respecting the constancy and uniformity of Nature, which are at present widely prevalent, especially among students of Physical Science, and which, in our estimation, though not in that of many who hold them, are inconsistent with any intelligible theory of Miracles and Divine Providence on the one hand, or with the existence of natural and moral evil, and of moral responsibility in man, on the other.

We first consider the Skepticism which has been professed respecting all religious convictions which are founded either on Adaptations or on Order.

I. ADAPTATIONS OR FINAL CAUSES.

This Skepticism in regard to Adaptations* would be less

* We prefer the word Adaptations to Design or Final Causes, though the latter are more commonly used, because these seem to assume the very point in dispute, which is, whether there be in the constitution of Nature and Man clear evidences of Design, *i.e.* of such Design as implies a Personal Designer. The language of Paley, "Contrivance proves Design," and "where there is design there must be a designer," appears to be loose and exceptionable.

frequent if it were considered that the religious Indications, or, speaking loosely, the teleological arguments which they are held to supply, are not evolved as strict logical conclusions from the mere consideration of means and ends. The idea of an Intelligent Cause seems to be an intuitive suggestion of the mind when these adaptations are observed; and it has been aptly compared to our instinctive interpretation of natural signs. As when we hear certain cries, or see certain gestures of an animal, we infer the feelings which prompted them; or as, when we observe sequences, a belief in their constancy is one of the necessary laws or conditions of thought; or as, when we see certain actions of free deliberative agents, we inevitably attach to them the notion of being right or wrong; so, when we observe these adaptations, in matter or mind, we unconsciously assume for them a higher than any natural cause. The assumption seems to be a necessary complement to the facts observed and their proper key. It is only through experience that we learn to distinguish accurately adaptations which can be ascribed to man's contrivance, from those which claim a Divine or Supernatural origin.

The objection to what is commonly called the argument from final causes, has been stated in various forms. We notice a few of them. It will be found that such objections generally assume some theory of the *origin* and the *limitation* of human knowledge, and that they are important or tenable only on the supposition of the truth of that theory.

Thus, admit that all our knowledge is confined, as is asserted by the Positivist and Sensationalist, to phenomena, and then, of course, of whatever lies beyond the phenomenal, whether it be substance or cause, powers in nature or a power above nature, we can affirm nothing. Or again, assume, as many do who adopt the opposite system (idealism), that such an arbitrary limitation of our knowledge is of the very essence of all Inductive Philosophy; that this philosophy *must* assume that the constancy of natural laws is absolutely

unalterable, and that they leave, therefore, no room for supernatural intervention, and in that case we are equally shut up to the conclusion that Induction can give no support to the Religion of Nature. It is on suppositions like these that most of the objections to that Religious Philosophy which is supported by the progress of the Inductive sciences will be found to rest.

Theological proofs or illustrations, when properly guarded, are rarely called in question by unsophisticated minds. To such they commend themselves with a clearness and a strength which seems to belong to no other kind of evidence. The hostile criticisms to which they have been subjected are the offspring, as we have just said, of certain metaphysical assumptions. Sometimes, however, they may be traced, not so much to the *adoption* of a false philosophy as to a desire to subject it to the severest of logical tests, inasmuch as any theory from which we can legitimately deduce Atheistic conclusions, demonstrates its incapacity to solve the problems that are presented by the constitution and necessary operations of the human mind. By some this is supposed to have been the object of Hume, the most intrepid and acute of all modern skeptics. It is by no means certain that Hume himself held that there was no room for religious convictions. On the contrary, there seems good reason to think that his skeptical speculations were intended to demonstrate, by a *reductio ad absurdum*, the utter insufficiency of a philosophy which assigns an exclusive place to the external world in the origin of our knowledge, and overlooks those primary convictions and impresible laws of thought which give *form* to the *matter* of our experience. But enough of this at present.

Says Cicero, "If any one were to carry to Scythia, or to Britain, that artificial sphere which our friend Posidonius lately made, each revolution of which represents the same changes in the sun, moon, and five wandering stars (or planets) that are observed to take place every day and night in the heavens,

who among those barbarians would doubt that this sphere had been contrived and perfected by intelligence? Yet there are persons who doubt, respecting the world, whence it and all that it contains came; whether it arose from chance or by some necessity, or whether it sprang from reason and a Divine Intelligence; and they seem to think that more was accomplished by Archimedes when he imitated the rollings of the celestial sphere, than was accomplished in the creation or constitution of Nature."

To this kind of reasoning it is objected—1st. That fitness or tendency to a specific end does not necessarily imply design, since, in man's workmanship, a tool or a structure often subserves purposes not foreseen by him who made it. This is quite true. But if the means are *various*, and yet *independent of each other*, and if all are found concurring with entire precision towards *one and the same desirable end*,* then the inference of an intelligent personal designer seems inevitable. Thus, in the artificial globe mentioned by Cicero, we assume design as its origin, not because a representation of the heavens *at any one moment is given* by it, for that might be given by a common mirror, or by a sheet of tranquil water, but because the **CHANGES IN THE HEAVENS** are also delineated; and because, to effect this, different substances, metallic and wooden, are brought together of such different sizes, figures, and descriptions as could alone produce the effect, and which have, in themselves, no necessary relation or dependence.

2d. It is objected, again, that this adaptation of means to ends proves nothing more than the instinctive workings of an intelligence without personality or self-consciousness; that "the highest divinity of the naturalists is the adaptive plastic power of nature, which may be regarded not only as distinct from the true God, but as inferior in spiritual dignity to the rational soul of man, though far surpassing it in power and in

* Dr. James McCosh.

the unerring skill of its instinctive workings." The writer* from whom we quote these lines adds, "Nature alone cannot prove the existence of a Deity possessed of moral attributes." Much of the force of this objection falls when we discover that, as urged by him, by Coleridge, and by others, it applies only to *Physico-Theology*, and that they recognize the value and authority of the evidence which we derive from *the constitution and operations of the human mind*. But, even as directed against the adaptations observed in the material world, the objection, though sanctioned by such honored names, strikes me as futile. It is an attempt to reduce the indications of design in the physical universe to a level with those which we observe in the structures of the Bee or the Beaver. But when we look at those structures, we never think of the unerring skill and ingenuity displayed, as if they were the fruits of a voluntary and deliberative *intelligence on the part of the animal*. We look beyond him to One who formed him, with his wonderful instincts, and who uses him merely as an unconscious or half-conscious instrument. But when we look at man, rearing an edifice for his own habitation, or for some other definite purpose, we recognize at once the distinctive mark of a free but at the same time finite and fallible intelligence. And, on the same principle, when we look at natural laws without us, or at the framework of our bodies and the marvelous structure of our minds, we discern the indications of a free but unerring Intelligence,—one that works not by necessity but by deliberation and choice,—whose plans have been selected with a deliberate purpose,—not imposed by a surd and inflexible fatality.

3d. Analogous to the objection last mentioned is one which is thus stated by Mr. George Combe: "The examination of a watch leads us to infer a watchmaker; but it cannot answer the further question, who made the watchmaker." In other

* Dr. Tayler Lewis.

words, if from considering the world we infer a world-maker, why not, from considering that world-maker, raise the further question by whom he was made? The answer is obvious. We reach the conception of a self-existent and Infinite First Cause not from adaptations alone. Thus it has already been shown that from the one simple fact that something exists, we are carried, by necessary inference, to the conclusion that something has always existed,—that this something is an immaterial and independent Being,—that He is self-existent, infinite, and omnipresent, and is the original cause of all things. To the same conception the human mind seems to be carried by other and still shorter routes; and it is by observing the indications of free Intelligence with which the world is crowded that we come to identify its Maker with the self-existent and Infinite Being who is conceived of on other and independent grounds.

4th. Mr. Hume objects that the theistic argument, from final causes, assumes an analogy between the world and the workmanship of man, for which there is no adequate foundation: "If we see a house, we conclude it had an architect, because this is precisely that species of effect which we have experienced to proceed from that species of cause. But surely you will not affirm that the universe bears such a resemblance to a house that we can, with the same certainty, infer a similar cause for it, or that the analogy is here perfect?" He would imply, that in the case of the house, we know both that there was a builder competent to make it, and also that it had a beginning, whereas we know neither of these things in respect to the world. We reply, 1st, that Geology, Astronomy, and Archæology do demonstrate, in the clearest manner, that the present state of the world had a beginning in time, and that no adequate natural cause can be assigned for its origin. We remark, 2d, that while a house differs from the universe in some respects, it does not differ from it in those which are essential to the argument. Both exhibit in their

materials and in the form and collocation of those materials, congruities and adaptations in respect as well to their different parts—when considered by themselves—as to some definite purpose which they are to answer as wholes; and in each case these congruities and adaptations irresistibly suggest the idea of an intelligent Author or Designer,—the intelligence manifested in man's workmanship being as inferior to that displayed in the constitution of the universe, as the extent of that workmanship is inferior to an immensity which the Heaven of Heavens cannot contain.

II. ORDER AND UNIFORMITY IN SEQUENCES, AS EXPLAINED BY UNBELIEVERS.

Speaking of the orderly succession of events in the natural world, Cicero remarks: "Whosoever supposes this to have sprung from chance, I see not why such an one should not believe that if innumerable specimens of the several letters in the alphabet be thrown together and shaken up they might not be found at length arranged in such order as to give us, word for word, the whole annals of Ennius; whereas I doubt whether such could be the case with a single line or verse." In other words, wherever we find order and regularity obtaining, either uniformly, or in a vast majority of instances, and where at the same time the possibilities of disorder are indefinitely numerous,—we are justified in inferring from this fact an intelligent cause.

The skeptic will tell us, however, that he does not ascribe this order and regularity to chance, but to the inherent and essential stability of an eternal self-subsisting economy; that the possibilities of disorder which we have assumed are imaginary, because "matter," to borrow the language of Sir William Drummond,* "is always obedient to the laws of its own being." To the same effect is the language of an able

* *Academical Questions.*

French cotemporary: * "To minds unacquainted with the study of the heavenly bodies, though often well informed in other branches of Natural Philosophy, Astronomy has still the reputation of being a science eminently religious, as if the famous verse, *the heavens declare the glory of God*, had preserved all its force. It is, however, certain, as I have proved, that all real science stands in radical and necessary opposition to all theology; † and this character of opposition between all science and all theology is more strongly indicated in Astronomy than in any other; precisely because Astronomy is, so to speak, more a science than any other science. By the development of the true celestial mechanics since the time of Newton, all Theological philosophy, even the most perfect, has been thenceforth deprived of its principal intellectual office; the most regular order being now conceived as necessarily established and kept up in our world—and even throughout the whole universe—by the simple mutual attraction of its different parts,"—as though this attraction and the collocation of these parts did not need to be accounted for as well as the order they produce. "At present," he adds in a note,—as if bent on signalizing the boldness of his disbelief,—"to minds that have been early familiarized with the true Astronomical philosophy, the heavens declare no other glory than that of Hipparchus, Kepler, Newton, and all those who have contributed to the establishment of their laws."

This doctrine we cannot proceed to discuss without placing by the side of the passage here quoted another almost the

* M. Comte.

† This proof seems to be that when we have reached by induction a great principle like gravitation, we have no right to inquire nor even to think (as if the human mind could help doing it!) about its nature or generating causes; but must take it for granted that these are questions incapable of solution, without the domain of philosophy, and to be abandoned, therefore, to the imagination of theological speculators or to the subtleties of metaphysicians.

same in principle though opposite in its origin. It affords another example of the manner in which minds holding the most extreme and antagonistic opinions often agree in respect to fundamental principles. Comte, an Atheist, proclaims that Inductive Philosophy can see nothing in Nature but an order necessarily established ; and the same sentiment—we had almost said the same language—is employed not only by distinguished Christian writers, but even by advocates of a high spiritual philosophy.

In their zeal against what they regard as a sensualizing process of the reason, and in their anxiety to substitute something in place of argument as the basis of religious faith, they often express themselves in this wise: “ *Inductive philosophy must assume as one of its leading axioms* that what it styles natural laws have ever been the same, both in the kind and degree of their action, operating in virtue of an inherent power, and not liable to be modified, hastened, or retarded by the supernatural.”

Stated briefly, these objections seem to amount to this, that Inductive philosophy presupposes the absolute constancy and stability of nature, and that it is therefore unphilosophical to infer that things were ever otherwise than as at present ; or, in other words, that they have had a beginning or author ; that the province of this philosophy is merely to establish what is, *i.e.* what are the phenomena and their relations, and that the idea, therefore, of anything above or beyond nature is irrelevant and preposterous.

To this we reply—1st. That when we take for granted that phenomena and the relations of such phenomena among themselves form the only proper objects of Philosophy—that to nothing else can we with propriety ascribe an objective reality—we transgress the limits of legitimate assumption. To us it seems clear that the human mind is so constituted that it cannot but look beyond sensations which it feels, to the external causes of those sensations,—beyond thoughts and emo-

tions of which it is conscious to the sentient power, principle, or person that originated them,—beyond attributes to substances, beyond events succeeding each other in time to an Eternal, self-subsisting Cause. And does not a like mental necessity constrain us to recognize personality in ourselves and others, and to ascend from personality finite and dependent to personality which is infinite and independent? The Inductive Philosopher, while intently occupied in observing facts, in comparing and reasoning upon them, in educing from them general laws, may not pause to analyze or even notice these notions; but does he not assume them to be real and indispensable,—essential parts of his mental furniture and necessary elements in all high Philosophy? In maintaining, then, or rather in assuming that Inductive science excludes from its domains all but the phenomenal, the objector begs the very point in debate. He achieves, by arbitrary definition and limitation, that expulsion of theology from the field of Inductive inquiry which he could have fairly accomplished only by clear and conclusive reasoning.

2d. We observe, again, that the stability which is properly assumed, in all inductive inquiries as pertaining to nature, is not absolute but contingent; that our anticipation of the recurrence of phenomena, in a constant order, is predicated upon the condition that only the same causes and circumstances continue to operate, and therefore necessarily involves the idea that with new causes new phenomena might arise,—such as the termination of the system on the one hand, or if we go back in time, its commencement or creation on the other. If there be ground, then, for the presumptive belief that other causes or the same causes, with other intensities competent to originate or destroy the system, do exist or have existed, then inductive philosophy, so far from repudiating the presumption, imperatively requires that we should investigate the evidence on which it rests, and especially that we should inquire whether Nature and Man, considered together, do not contain within

themselves indications of one great cause and of its creative or destroying energy.

Now we have already pointed to facts such as the universal belief among mankind in an intelligent first Cause,—the benign moral influence of that belief on individuals and on nations,—and the instinctive resort to it of the human mind on great emergencies, whether of speculation or of action. We have also pointed to phenomena which seem to show clearly that the course of nature has not been always what it now is, and which render it at least highly probable that supernatural causes have been at work. These facts go to establish the strongest presumption—*independent of other evidence*—that there is a great First Cause, the Author of Nature, and therefore supernatural. When, then, we turn to the examination of Nature (material or immaterial), we are not shut up to the exclusive survey of her phenomena in their present order and constancy. We come with the anterior idea of an all-powerful Being, able to originate, suspend, or terminate all existing systems, and we ask whether those systems furnish any tokens of his existence and agency.

3d. But the skeptic still insists that it is unreasonable to ascribe this order and constancy in nature to an Almighty and Intelligent Author, since the fact suggests its own most natural explanation, which is, that events and objects have thus followed each other in one constant series through all past eternity, and that they are destined to continue so forever. If this hypothesis of an eternal series be consistent with reason, and if it will explain the facts, to resort to the idea of a Personal, self-existent Creator for that purpose is, of course, gratuitous and therefore unphilosophical.

Now in respect to this theory, which has had more or less of currency since the time of Democritus, we may remark—
1. That were it admitted it would only explain the uniformity of sequences in nature, affording no solution of those innumerable *collocations* and *adaptations* which are vastly more strik-

ing, both in themselves and as evidences of design. 2. That the hypothesis of an eternal self-subsisting system of objects and sequences involves some of the very difficulties on account of which the idea of an infinite and Supreme Being is rejected. The skeptic repudiates the notion of a First Cause, in part, because he cannot, he says, conceive of an Infinite Being,—and what does he accept as a substitute? He accepts that which comprehends Infinity in the several senses of infinite number, infinite space, and infinite duration. 3. But we observe further, and more particularly, that this hypothesis is self-contradictory. To predicate that of each part which you deny of the whole, or to affirm of a whole series what you deny of each individual term, seems clearly absurd, and yet this is done by him who pleads for an eternal succession of finite beings. Every particular being in the series, upon the supposition, depends upon a preceding one; and yet the whole depends upon nothing. "The difficulty of supposing a being beginning to exist without a cause is not at all lessened by supposing an eternal succession of such beings,—for unless there be some first Being, on whom all the rest depend, it is evident that the whole series hang upon nothing, which is altogether as impossible as that any one in particular should. Hence it is evident there must always have been one intelligent being, whose existence is uncaused and absolutely eternal, unchangeable, and independent."*

4th. Waving such objections, however, we aver that the hypothesis of an eternal succession of the finite beings and phenomena we now observe on the earth is at variance with moral and physical facts of the most unquestionable nature. History conducts us back but a few centuries before we come to the infancy—the very cradle—of all the art, science, and civilization among mankind; and is it conceivable that this our race could have subsisted on the earth for millions on millions

* Robert Hall.

of years, having all the while the same thirst for improvement and the same boundless capabilities for it too, and yet have all the while remained stationary,—never rousing itself from its stupor till during this last brief period, and throwing into this insignificant fraction of its existence all its mighty efforts after progress and amelioration? But there is a physical fact yet more decisive. Geology conducts us backward through successive revolutions on the surface of our globe, and soon reaches a period when man did not dwell upon it. Then, in its ascent along the mighty tracts of geological time, it attains to other and remoter periods, when one and another species of terrestrial animals first started into being; and independent of supernatural means no hypothesis has yet been suggested which can account adequately for this introduction of successive orders of living beings at vast intervals—those orders rising one above another. And even if such an hypothesis could be suggested,—if we can suppose that these successive races of plants and animals rose spontaneously into life,—still, as we retrace the series and go from orders more perfect to those less so, from man to mammalia, from mammalia to reptiles, from animals to vegetables, from vegetables to a still earlier period when there was no living thing upon the earth, plant, or insect, or fish,—and from this again to one when all seems to have been darkness and chaos,—do we not see that we approach all the while nearer and nearer to the beginning of the system,—to the great and eventful epoch when Creative originating Power—even God—was needed? Astronomy gives evidence of the same great fact (*i.e.* the limited existence of our globe and system) in the spheroidal figure of the earth, in the existence of a resisting medium through which the planets seem to move, and in the appearance of new and the disappearance of old stars in the sidereal firmament. Thus the figment of an eternal succession of beings, whether animal or vegetable, is shown to be as inconsistent with observed facts as it is incongruous with reason.

III. ORDER AND UNIFORMITY IN SEQUENCES AS MISAPPREHENDED BY BELIEVERS.

Theory of Miracles.

In considering the uniformity which characterizes material and mental phenomena, a grave question presents itself. Is it, on the one hand, absolutely constant, in all its parts and details, as well as in its main features, not liable to be interrupted by man in the exercise of a self-determining power,—not subject to suspension or deviation through the miraculous or providential agency of God,—not marred by any existing disorders or irregularities, but perfect, and destined to be eternal? Or, on the other hand, is it a law of uniformity, subject to some exceptions and irregularities,—liable to be set aside by the supernatural agency of God, whether miraculous or providential, and liable also to be modified, and, in some sense, disturbed by the free moral agency of man?

We have spoken of this as a great question. It is, in truth, the one question which includes within itself almost all the deepest problems of our being,—problems which, in one or another form, have tasked, and, we might perhaps add, have hitherto defied, the sagacity of the most eminent metaphysicians and theologians. We are not so presumptuous as to suppose that we can cast new light upon them. When Milton describes his fallen angels waiting the return of their great leader from his excursion to find the new-created earth, he represents them as whiling away the tedious hours, some in heroic games, some in wild and terrible sports, some in song, and some in philosophical musings and disputations. These last

“ Apart sat on a hill retired,
In thoughts more elevate, and reasoned high
Of Providence, foreknowledge, will, and fate,
Fixed fate, free will, foreknowledge absolute,
And found no end in wandering mazes lost.”

Milton understood well the connection which these several questions have with each other, and with the still more comprehensive one which we have stated, and he doubtless intended to place on record his conviction that they are questions which transcend the utmost reach of man's powers in his present state, and are destined, perhaps, to transcend them forever; for truly none but an omniscient mind would seem adequate to their full solution. We touch upon them,—not because we have the presumption to imagine that we can offer a satisfactory solution, but because a solution has been virtually assumed, in some of the current science of the day, and has been made the basis of some of the arguments in favor of natural Theology. The bearings of this subject on metaphysical theology and on general philosophy we do not propose to examine, but merely its connection with science as founded in Induction, and with the use of science as an auxiliary and handmaid of Natural Religion. Considered in this point of view it is not a controversy between the theist and the atheist—between the skeptic and the believer. The philosophy which would resolve the order of nature into a self-subsisting necessity we have already considered. The philosophy which we have now to examine would resolve it into a necessity established by God,—recognizing Him as the author and establisher of the system, but as governing it exclusively by means of unalterable laws and agencies,—laws which contain within themselves the principle of self-perpetuation and self-development, or which admit Divine agency only when exerted in obedience to those laws. It is the grand question between the physical and the moral under a new phase, and also between the natural and the supernatural.

In one respect the doctrine which we have now to examine differs materially from that view of philosophical necessity which has been expounded and maintained by Christian writers. Edwards, for example, in his masterly work on the Will, while he denies the ability of man to interfere with the

established relations between cause and effect,—between motive and volition,—constantly recognizes the idea of a providential and supernatural intervention on the part of God. But the scientific writers to whom we refer go much further. They maintain a constancy in nature which, as we have said, seems to be inconsistent with any intelligible theory either of miracles or of a superintending Providence, while it leaves no room for liberty in man or for evil (physical or moral) in the world. Indeed, with the deepest respect for the learning, ability, and moral worth of some of them, we find it difficult to draw any line of distinction between their views and those of the Pantheist or Atheist. We do not doubt in the least the sincerity of their religious faith ; we appreciate fully the injustice of charging a theory with all the odious consequences that may be deduced from it ; and we know well how easy it is to hold speculative errors which may be innocuous to their immediate authors and advocates, though not harmless to those who adopt them as practical convictions. Yet we must be excused from adding—for it is a truth attested by long experience—that these exaggerated views of the constancy and inviolable regularity of natural sequences find their most earnest and most numerous advocates among the skeptics ; and that skepticism and fatalism seem to be their legitimate results.

We have just intimated that it is difficult to distinguish between the views of some of these writers and those held by Pantheists. Spinoza denies that there are or can be any disorders in the universe. To suppose that the being and attributes of God can be better discovered by the disorder than by the order of nature, he thinks is foolish ; and he accordingly maintains that “miracles can have no existence except in the fancy of the ignorant vulgar, who are more struck by an apparent anomaly than by the uniform tenor of eternal and unchangeable laws.” The same sentiment pervades the Academical Questions of Sir William Drummond, and will be

found, indeed, a prevailing element in skeptical literature and philosophy.

But how does it compare with the doctrine of some Christian Philosophers, even when engaged in defending the principles of religion? Mr. Babbage, one of the first mathematicians in Europe, in his *Ninth Bridgewater Treatise*, written, as he tells us, expressly to show that mathematical philosophy can furnish the most cogent and irrefragable arguments in behalf of the Divine existence and perfections, thus expresses himself:*

“To have foreseen at the creation of matter and of mind that a period would arrive when matter, assuming its pre-arranged combinations, would become susceptible of vegetable forms; that these should in due time themselves supply the pabulum of animal existence; that successive races of giant forms or of microscopic beings should, at appointed periods, *necessarily rise into existence* and as inevitably yield to decay; and that decay and death—the lot of each individual existence—should also act with equal power on the races which they constitute; that the extinction of every race should be as certain as the death of each individual, and the *advent of new genera be as inevitable* as the destruction of their predecessors: to have foreseen all these changes and to have provided by one comprehensive law for all that should ever occur, either to the races themselves, to the individuals of which they are composed, or to the globe which they inhabit, manifests a degree of power and of knowledge of the highest conceivable order,” etc.

To the same effect, though not so explicit, is the language of Mr. Powell, an eminent mathematician and philosopher of Oxford, in his work on the Connection of Natural and Divine Truth:† “This is, perhaps, of all others, the reflection which, to a thinking and philosophic inquirer, tends most to exalt

* Babbage, p. 45.

† Powell, p. 155.

his ideas of the Divine perfections; the regulation of all the varied and complicated actions of the material world by an unvarying system; the combination of a limited number of first principles producing all the variety and harmony of the creation; the sufficiency of a few simple laws to regulate the entire complexity of a vast mechanism; the first constitution of the world which, *without further interposition, contains within itself the means of perpetual renovation and stability.* Now, this conclusion rests (as we have said) on the collective inferences of a real maintenance of inviolable order in the material world. It is evident, then, that any event occurring to interrupt the preservation of this order would be a serious exception and formidable difficulty in the way of our conclusion."

The manner in which these doctrines have been applied in the study of Astronomy, Physiology, and Geology must be sufficiently obvious to those who are at all conversant with these sciences. Among philosophical Geologists, for example, while there is a school which maintains that the present state of the crust of the earth affords incontestable evidence of great catastrophes in the distant past, and of the exercise, at different eras, of a power which was at least extra-natural if it was not supernatural, there is another, and we believe a still larger one, which insists that the earth, so far as explored, affords no trace of the agency of any causes other than those now in operation. Geologists of the latter class do not deny that God was the Creator of the Heavens and the Earth; but they hold that He manifested his wisdom and exerted his power, not in successive miraculous revolutions, but merely in the original establishment of a system, out of which all succeeding changes have been evolved as natural and necessary results.

To show what sweeping applications of this principle are sometimes made by men of science, even when they are attempting to vindicate the Divine honor and majesty, let us revert for a moment to Mr. Babbage. In the celebrated Cal-

culating Engine of this gentleman,—the noblest triumph of mathematical and mechanical skill yet known,—a machine that is to do by itself the work of calculating the numbers used in astronomical and nautical tables,—he finds that he can so adjust its parts that it shall, at every future period, though ever so remote, make one or two seeming exceptions to the one only law which it has hitherto observed. This law, however, he states, is not the full expression of that by which the machine acts, but the excepted case is as absolutely and irresistibly the consequence of its primitive adjustment as is any among the countless multitude which it may previously have produced. For instance, the machine can be so adjusted as to register only square numbers for thousands of years, and then, in one or more instances at any given time, it can register cube numbers. And since a property so wonderful can be given to a piece of human workmanship, it is suggested that what we have gazed upon as miracles, as the actual suspensions of natural law, as the manifestation of a present God, as supernatural declarations of his ceaseless dominion over man and the earth he inhabits, as tokens of his sleepless superintendence over this race of ours that He hath made and which He will hereafter judge,—these, it is suggested, after all, are but natural results of decrees established thousands or millions of years ago. And so of Providence. It is a Providence exerted in foreseeing, at the first, all possible contingencies, and in providing for them so perfectly, and with a kindness so vigilant, that no occasion for intervention or even for supervision can ever afterwards arise.

Now, that to Mr. Babbage's mind this is the view best calculated, as he affirms, to afford exalted conceptions of Divine Wisdom and Power, we cannot doubt, and there may be many minds beside his to whom it appears in the same light. To a profound mathematician, employed through long and toilsome years in calculating the possible combinations of numbers, in devising the adjustment of complicated mechan-

ism, in endeavoring to foresee all the disturbing causes that can possibly arise, in striving to bring, within the performance of a machine, the greatest possible range and compass of results,—that such a mind may find itself awed and overpowered when it thinks what must have been in the view of that Eternal Being who, out of an infinite number of different laws of gravity which might have been selected, as we could easily show, chose that one (the inverse ratio of the square of the distance) which now obtains and which Newton first discovered; when he considers how the best intellect of the scientific world, for the last two centuries, had exhausted itself in tracing out but a few of the consequences of that single law, and how all its consequences, even the remotest, nor its consequences only, but all the possible consequences of each one of that infinite number of other laws which might have been substituted for it, must have been foreseen by Him who gave it preference; when he considers, too, that this is but one of innumerable other material laws, now in operation, and whose establishment evinces, in each case, a like boundless foresight; and when to material laws he, in thought, adds those which connect matter with animal life, and those again that connect both with mind, and those again which govern the operations of our mental, moral, and spiritual nature; when he thinks of the countless varieties of organized beings, living or extinct—how mountain masses have been piled up not only out of petrified animals, but even out of dead infusoria so small that forty-one thousand of them made but a cubic inch; and then, when he conceives that the nature, functions, and relations of all these countless varieties may have been foreseen and provided for in one stupendous effort of inventive and creative power,—who will not admit that here is a noble conception of God, that to such a mind, with such habits, it would naturally seem the noblest and most sublime?

But is God to be contemplated and adored by none but mathematicians? And are there not in the Divine nature

other attributes besides Wisdom and Power? Is there not Holiness? Is there not rectitude? Is there not Parental Love? When we consider Him as a mechanician merely, arranging masses of matter, availing himself of their pre-existing properties, adjusting them to certain uses,—how poor, how inadequate after all is the noblest of such conceptions! God not only arranged matter, He created it. He assigned to it its properties. Above all He created mind; He surrounds himself with intelligent offspring. This material framework of nature, these verdant fields, these extended plains and towering mountains, these flowing rivers and expanding oceans, this grand array of forces, and motions, and vicissitudes, all marshalled, as it were, in order, and moving forward in harmony,—what is it all but a *dwelling-place for man*, the intelligent, self-conscious, accountable child of God? And when does that God shed forth the effulgence of his glory so brightly on our minds as when we can contemplate Him sitting not only high above all the material forces that He hath made, having an Immensity that neither the heavens, nor the heaven of heavens can contain, but sending forth conscious intelligences as heralds of his moral perfections? Even heathen poets could celebrate the praises of God as a father. And what is our noblest conception of Father? When, in our thoughts, do we seem most to exalt the rule of a wise, just, and loving Parent? To what should we appeal, if we were most anxious to commend him to the love and reverence of his household? Would it be merely to the wisdom with which he had devised and established the regulations of that household; to the sagacity with which he has anticipated every emergency; to the fact that he has perfected such a system that it can dispense altogether with his own presence and agency, and that he now lives far away from the home of his affections, never interposing in its affairs, nor sending to it one fresh memento of his care? No! we ask of a father regard, in the first place, to the moral welfare of his children; we ask a

rule and regimen which will contribute to form character, to ennoble sentiment, to develop self-control and nerve with spiritual power. And we feel that this needs not only law, but the administration of law, not only rules, but influences; and not only these, but such changes from time to time that these rules can adapt themselves to emergencies created by the child himself in the use or in the abuse of his moral liberty.

Here, then, it seems to us, is a sufficient answer to Mr. Babbage's theory of miracles,—a theory by which he would transform them from supernatural into natural events. He adopts it because it seems to him the view which best illustrates the wisdom of the Deity. We say, in reply, that did the physical system of the world subsist alone, by itself and for itself, or were it the dwelling-place of beings not endowed with moral natures, nor with faculties essentially progressive, we might assent to this opinion. But when we consider this system in its higher relations; when we consider it as connected with a nobler economy,—even a moral and spiritual one; when we recollect that in assigning laws to matter and to mind God seems to have had special reference to the improvement of man in wisdom and virtue, then a great question arises.

Suppose that, instead of inciting him to a faithful cultivation of these powers to a course of upright, beneficent, and holy living, to a clear recognition of his Creator in the things that He hath made; suppose that the very constancy of these laws had contributed with other causes to superinduce a practical atheism and drown men in sensuality and folly,—what more likely than that this constancy should in such case be arrested; that the same Divine and miraculous power which established the system should now suspend it; *that, having failed to teach man by the natural, God should again invoke the supernatural*; that, stupefied as men were by the earthly and the sensual, they should be startled from their guilty slumbers by a voice from Heaven? This seems to be the true *theory of miracles*, and it involves no impeachment of the stability of the Divine coun-

sels, since the same moral purpose which assigned fixed laws and properties to matter at first, now requires that, in order to the attainment of its high and beneficent ends, those laws should be suspended,—just as a wise parent, who prescribes a course of exercises for a child, may revoke or suspend them the moment that he finds it abused by that child to the injury of his health or his morals.

But admit, it may be said, that it is moral disorder chargeable only on man and on his free moral agency that occasions these deviations in physical laws from their accustomed course,—why not allow such deviations to have been appointed before the foundation of the world? and why not recognize them when they occur as necessary and unavoidable results of the physical character which God impressed at first upon the universe? We answer by inquiring why we should adopt this view, thus involving some of the plainest parts of the Bible in ambiguity. If Natural Theology have its own proper evidence, so has the Bible also; and in choosing between different views of miraculous interposition, neither of which can claim demonstrative evidence, it is surely not too much to ask that some respect should be paid to clear and explicit declarations of the Sacred Books. Waving this, however, let me ask if God is a mere mechanician, who would be wearied if He gave constant attention to the great structure which He once made and which He launched on boundless space—its native element? or would it derogate from his greatness, though with a Father's eye and with all a Father's heart He should continually bend over his intelligent offspring and interpose when necessary to save them from themselves,—from the appropriate fruits of their folly or their guilt? Concede to man so much of moral freedom that he can sin, and then you may easily represent to yourself an awful *moral crisis which would not only justify but also require these miraculous suspensions of law*; and thus, while blessed spirits beneath brighter heavens may be permitted to behold in new worlds as they rise into

being sensible proofs of God's presence and Almighty power, man—the perverse, the erring, the sinful—may need to be rebuked, by laws disturbed; by elements convulsed; by catastrophes that seem to attest the utmost displeasure of that God whose wrath is consuming fire.

But, again, it may be said that though such a reason or final cause for miracles may be assigned with plausibility in respect to those which occurred after man was introduced upon the globe, yet it can hardly apply to those great physical vicissitudes which preceded that event, and which we may also regard as supernatural. We reply, that inasmuch as clear memorials of those vicissitudes have been engraven on the rocks and hills, they do present even now to the student of nature an instructive moral lesson, for they lead him back from one memorable era to another,—each anterior to the existence of man upon the earth, and yet each illustrated by the exercise of God's creative power. Independent, too, of the confirmation yielded by these records of creation to the records of revelation, they teach the further instructive lesson that the Providence of God is truly a superintending providence; that it did not expend itself in one effort of creative power and foresight; that, having interposed in ages past one after another display of its creative energies, those energies are to be regarded as ever active, and that man is to feel that the power in which he lives and moves and has his being is as sleepless in vigilance as it is exhaustless in kindness and unfailing in rectitude.

We cannot dismiss this branch of the subject without saying one word of the entire nullity of miracles as a ground of evidence, if they are only preordained results of physical law. In such case not only would the language in which they are described in the Bible be deceptive, but those who wrought them would in one important sense be impostors and the miracles themselves a fraud. They are now supposed to attest the agency of God in a supernatural manner; but this theory

makes them merely natural. They come before us, in the Bible, claiming regard as special signs and messengers from Heaven. But, if Mr. Babbage is correct, neither prophecy nor the fulfillment of prophecy, neither prediction of the wonderful works of Christ, nor those works themselves, ought to awaken more awe or inspire a deeper sense of God's presence than the daily rising of the sun. All teachers who make God and immortality their theme would be alike Divine messengers, and would stand precisely on the same level, except as some might excel others in the matter of their instructions. Nay, the same foreknowledge which discerned occasion, and the same ordaining power which prepared the way for a Jesus or a Paul, may have provided also for a Mohammed or a Smith. And tyrant after tyrant, as he vies to become the scourge of God and the terror of mankind, would have to be ranked, on this principle, among Apostles and Missionaries of the Most High,—preadjusted parts in nature's universal plan.

“If plagues and earthquakes break not Heaven's design,
Why, then, a Borgia or a Catiline?

This may be the philosophy of a rationalizing poet, but it is surely not the philosophy of the Bible; nor can it well be his who sees in God a universal, ever-gracious, and provident Father.

II. We have thus spoken of the inconsistency of this theory of causation with what would seem to be the true character of God as gathered both from nature and from revelation. We come now to speak of its inconsistency with what must seem to be the nature and mission of man. It is often said that belief in the perfect uniformity of nature is instinctive in man; that all our experience tends to ripen and strengthen this belief, and that any other supposition would render science impossible and action but a leap in the dark. That belief in the substantial uniformity of nature is intuitive we admit, and

we admit, too, that as we extend our acquaintance with the Divine works we often find order and uniformity where once we saw only confusion or supernatural interference. But we do not conceive that this intuitive belief is a precise *measure* of that uniformity which really exists in nature, any more than that our instinctive fear of danger or love of pleasure is a precise measure of that which in the one or the other of these forms is approaching us. Each serves to admonish us of a general fact, and to impel us to ascertain its true character and extent. And we would remind those who reason otherwise, and who think that if there were to be any contingency in nature,—any possibility that the regular succession of cause and effect could be interrupted,—that there would then be an end of all science and all systematic industry; to such we would say, that *to man's mind there must, in fact, always be a vast world of contingencies*. Whatever may be the case in nature considered absolutely, there is before him, however wide the horizon which his knowledge spreads out, an untrodden, unseen wilderness beyond, and to him that wilderness is crowded with uncertainties. He knows not what a day or an object may bring forth. Let him finish the most consummate specimen of workmanship; let science and art have done their best; let no precautions against danger or disappointment be omitted, and yet in that master-piece there are still contingencies. Some latent disturbing cause may have eluded observation, and in a moment an engine, intended, perhaps, to be a terror only to foes and a strong bulwark to friends, may send a cry of horror through the surrounding throng, prostrate in death some of the most honored of the land, and spread wailing through many a happy household. So limited, after all, is man's knowledge. He discovers what he calls truth, but it is only an approximation, not an exact conformity, to things as they are. It embraces some, but not all the elements of the objective reality.

And hence the differences between laws as laid down in

theory and as applied in practice. Man enlarges the boundaries of his intellectual prospect, but it is only to find that it connects itself, at innumerable points, with the yet more distant and unknown. But he does not, therefore, abandon inquiry; he does not cease to reason or to act upon the probabilities of the future; he provides for the morrow, though he knows not that the morrow's sun will ever rise upon him; he engages in the ventures of life oftentimes when the chances of success are against him. And does he not do well? To omniscience only could all the issues of the future be known—all be fixed and certain. To created minds much must ever appear contingent, and yet that much does not and ought not to prevent them from acting as though it were fixed and ascertainable.

But we observe further that this belief in the uniformity of nature is not the only intuitive principle of the human mind. Is there not the sense also of the supernatural,—the idea that there is a power above nature,—and that this power is likely at times to interfere with the ordinary course of events? Why is it that men in the infancy of society are so prone to ascribe unwonted phenomena in the heavens or on the earth to Deities? Why do they hear the voice of a spirit in the howlings of the tempest, or see his form in the clouds? Why do they people every grove and fountain and mountain-cleft with its Divinity? Is it not the instinctive uprising of the soul towards the invisible and supersensual? Is it not a proclamation sent forth from the innermost recesses of our hearts, saying there is more than eye sees or ear hears? there is more than visible change following change in one eternal round? there is a power that established that order for one wise purpose, and that may set it aside for another? There is an eye that does not sleep and an arm that does not tire,—a power that sitteth on the circle of the earth, and the inhabitants thereof are as grasshoppers, and it *ordereth* all things according to the counsel of its own will.

This, we say, is the instinctive language of the human heart.

As there is one intuitive principle that points towards constancy, so there is another that points towards a source of change. Both are liable to excess and abuse. In the terrors and follies of superstition and fanaticism,—in the morbid fancy that sees a miracle in every eclipse or meteor or earthquake, a special providence in every act of man or nature,—we see the sense of the supernatural perverted and abused. But is there no perversion of our faith in nature's uniformity? Whence most of the disappointments of life? Whence the prejudices, the misjudgments, of all? Whence the visionary schemes of practical men, the idle speculations of theorists, the blind and braggart confidence which says *all things continue as they were from the beginning,—to-morrow shall be as to-day, and much more abundant?* *Where is the promise of God's judgment? tush! He doth not regard.* And through such confidence, what multitudes rush upon their own destruction! All this is but an abuse and misapplication of our instinctive faith in nature's constancy,—a premature inference from the past to the future, from the known to the unknown, from what has been under certain circumstances to what will or may be under other and different circumstances.

Both of these principles, as it seems to us, have an important office; as both are liable to perversion. We strive to enlighten and enlarge our views of natural causation—by the established order of sequences in nature; by observation and by analysis; by reasoning and experience; and thus we gradually attain to those larger views which characterize true philosophy, and are salutary guides in life. Should it not be so with the instinctive sense of the supernatural? Should science, in its highest and truest sense, hope to advance or to reach a large and comprehensive view of things if it omit all reference to this deep and all-pervading element in the mind's operations? The skeptic Comte may contend—as he does—that Science tends regularly to recede from the supernatural till it plants itself on the metaphysical, and from the metaphysical

again till it rests finally on the physical and positive. From him this might be expected. But is this the view which we should expect from the true disciple of Bacon,—of him who wrote in this wise in his Confession of Faith, “I believe that notwithstanding God hath rested and ceased from creating since the first Sabbath, yet, nevertheless, He doth accomplish and fulfill his divine will in all things, great and small, singular and general, as fully and exactly by providence as HE could by miracle and new creation, though his working be not immediate and direct, but by compass: not violating nature, which is his own law upon the creation?”

In respect to *Providence*, different views, we are aware, have been entertained. To some, as to Mr. Babbage and Mr. George Combe, Providence is but the prescience that foresaw and the preordaining power that in the beginning provided for every future contingency; so that now the course of things flows on in obedience to nothing but inexorable law. But is such the view which meets the deep and irrepressible yearnings and convictions of the human soul? Is it only to an inflexible Law-maker that that soul cries for relief from the depth of its distress? Its instinctive resort when awful danger threatens, to a power above nature,—its appeal, when struggling with fierce temptation or with overpowering appetite, for spiritual succor to some Being that can act directly on the intellect, the affections, and the will,—its unshaken faith, when all things seem to be against it, that though the sea roar and the waves thereof be lifted up, there is One—a Father—sitting on high, who is mightier and who doeth all things well; these sentiments, so instinctive and ineffaceable, not learnt from Scripture, but felt wherever the human heart throbs with life and emotion,—were they given for naught? Do they point to no corresponding reality? or is the Being to whom they point one who operates on man only through fixed laws and properties, which he never modifies, never overrules, never disturbs? We put the authority

of the Bible here entirely out of the account. The great and wise men of the world,—those who have drunk deepest at the wells of uninspired wisdom, who have seen with intuitive glance farthest into the constitution of things, and whose intuitive perceptions have been most enlarged and ripened by profound observation and reflection on the ways of men, and on the course of the world's history,—what has been their judgment? Have they seen in Providence only foreknowledge and foreordaining power exerted in creation? Have they seen only wisdom and might employed in establishing an irreversible order of events which is destined to move on forever without superintendence or intervention? or have they seen in it the supervision of an Infinite Father who is Governor as well as Creator of all his children,—who does not merely supervise as spectator the movements of dead mechanism, but who, as active guide and director, presides over the voluntary agency of intelligent and moral beings, and though He works now no miracles in their behalf, yet causes established laws and operations to concur and coincide in a manner often the most remarkable, and—may we not add?—the most supernatural?

On this point let Dr. Franklin answer. No one will accuse him of superstition, or of an undue regard for the supernatural. All will admit that few men ever surpassed him as a shrewd observer of life and of human affairs, or as a profound inquirer after the causes and principles that lie at the bottom of great events. And what was his language when addressing the Convention of the North American States, sitting in Philadelphia in 1787, to frame the Federal Constitution, in support of his motion for daily prayers in that body? It must be remembered that weeks had elapsed without the convention having accomplished any part of its all-important work, and that irreconcilable differences seemed likely to defeat its purpose altogether. It was under these circumstances that the American sage introduced his resolution and made the following remarks: "In the beginning of the contest with

Britain," said he, "when we were sensible of danger, we had daily prayers in this room for the Divine protection. Our prayers, sir, were heard, and they were graciously answered. All of us who were engaged in the struggle must have observed frequent instances of a superintending Providence in our favor. To that kind Providence we owe this happy opportunity of consulting in peace on the means of establishing our future national felicity. And have we now forgotten this powerful friend? or do we imagine we no longer need his assistance? I have lived, sir, a long time (eighty-one years), and the longer I live the more convincing proofs I see of this truth,—that God governs in the affairs of men. And if a sparrow cannot fall to the ground without his notice, is it probable that an empire can rise without his aid? We have been assured, sir, in the Sacred Writings, 'that except the Lord build the house they labor but in vain that build it.' I firmly believe this, and I also believe that without his concurring aid we shall succeed in this political building no better than the builders of Babel; we shall be divided by our little practical local interests; our projects will be confounded, and we ourselves shall become a reproach and a by-word down to future ages; and, what is worse, mankind may hereafter from this unfortunate instance despair of establishing government by human wisdom and leave it to chance, war, or conquest. I therefore beg leave to move that henceforth prayers imploring the assistance of Heaven and its blessings on our deliberations be held in this assembly every morning before we proceed to business, and that one or more of the clergy of the city be requested to officiate in that service."

This is not the language of one who looked on God as inexorable; or, in other words, as a Lawgiver whose system is that of inflexible uniformity. And to whom were these words addressed? Over this assembly presided George Washington, whose writings and whole life are more remarkable for nothing than for their frequent and pointed recognition of the agency

of the same Divine Providence. Those venerable men had passed together through times that emphatically tried their souls, and it was in that hot and fiery furnace that their laboring hearts had felt that succor from God was a necessity of our moral nature, and that man's extremity is God's opportunity.

Or, let us appeal, if we will, from the authority of Washington and Franklin to that of Shakspeare, the "myriad-minded," of whom it hath been said, "The mind of Shakspeare was as a magic mirror, in which all human natures possible, forms, and combinations were present intuitively and inherently, not conceived, but as connatural portions of his own humanity." And what, according to him, is the language of the human heart when speaking from its deepest convictions?—

"Our indiscretions sometimes serve us well
When our deep plots do pall; and that should teach us
There's a divinity that shapes our ends,
Rough-hew them how we will."

A lesson so deeply imprinted on the poet's own mind that more than one of his dramas seem to have been constructed for the express purpose of exhibiting the workings of this Divine and special Providence in the affairs of men.

On this great subject we do not purpose to touch any further than as it connects itself with the present state of science and with some of its supposed aberrations. As there are mathematicians and mechanical Philosophers who, in their views of the fixed order of nature, leave no place for miracles, so are there mental philosophers and anthropologists who seem to leave no place for providence or prayer. As an example of the latter we may mention one whose name we have already introduced, and of whom we would speak without the least disrespect. No candid mind will deny that George Combe deserves on some accounts consideration and gratitude as one

who has done good service to philosophy and to mankind. In respect to the very matter under discussion, and in connection with which he seems to us obnoxious to grave censure, he has still inculcated with great force, both of reasoning and of illustration, important and much-neglected lessons. He has taught, especially in his work entitled the *Constitution of Man*, that we live under a government of law, physical, organic, and mental, which we are bound to respect and which it is not safe for us to disregard; "that the good and evil of life are much more in our own hands than is generally supposed; that many of the sufferings of humanity—sufferings too often considered as fixed by the Creator in the constitution of the world—admit of removal by a greater knowledge of the laws of nature and a more careful application of that knowledge; that many of the calamities of life ascribed to an inscrutable Providence may, on careful examination, be traced back to misconduct either in ourselves or in those whom we might have influenced to better things; that an attention to one part of our duty will not exempt us from the consequences of neglecting another; and generally, that increased knowledge and virtue must necessarily draw after them greatly increased happiness." These are truths by no means new, yet much overlooked, and in urging them on men's notice and setting forth the great command which each one has over the sources of his own happiness Mr. Combe has rendered a useful service to mankind.

Wherein, then, it may be asked, do we differ from his views? We answer, that we dissent from the fundamental idea of his speculations, which seems to assume that there cannot possibly be such a thing as contingency in the universe, and also from the exaggerated pictures of man's capabilities and consequent temporal responsibilities which he draws. *Man, sole master of his own destiny by means of obedience to natural laws,* is the sum and substance of Mr. Combe's Philosophy in the work just referred to (which is much the best, as it seems to

us, he ever wrote). Is this as true and comprehensive a philosophy as Shakspeare's, which assigns to man the humbler office of "rough-hewing" his ends,—to God the higher one of "shaping" them? Who that traces back his own experience, or looks on the world around him, does not see an agency other than man's when availing himself of Natural Laws? Who does not see how little way, after all, our utmost knowledge of those laws, or our best obedience to them, can go towards compassing the good or shunning the evil of life? And where would be the use of prayer if all things were ordered by fixed and irreversible laws that regard not individuals, but have respect to masses only? If nothing can ever accrue to us except through such laws moving in one ever-recurring round,—subject in no respect whatever to modification in themselves or in their connection with other laws,—then must every future event be absolutely fixed, and prayer to have it altered must be a sad masquerade,—as deficient in taste as it is in ingenuousness. To announce our wants to God cannot be its office, for to an Infinite Intelligence they must be known already. Nor, if this doctrine be true, can this knowledge be of any avail. To importune for special blessings, temporal or spiritual, would be superfluous, since those blessings, if they fall within the onward way of unalterable laws, would become ours without prayer, and no prayer can procure them if they do not. To exert a persuasive influence on the Divine mind is impossible, since that mind is inexorable. What, then, in such case, would prayer become but a species of pious legerdemain, where, under pretence of pleading with God for that which is no longer his to dispense, we gain the chance of communing with his spirit, and thus gain grace,—not, indeed, from Him, but by a species of self-development? Were such the Divine government, meditation not prayer, devout contemplation not entreaty or intercession, would befit alike man's estate and God's eternal majesty.

But we conclude these strictures. We have succeeded in

exploring but a part of the ground marked out in the beginning of this section. Besides the inconsistency of these exaggerated views of the constancy of nature with any intelligible theory of miracles or of Providence, we intended also to have pointed out their inconsistency with the moral freedom and responsibility of man, and with the existence of evil and disorder in our world. But these points we must omit. Our object has been to indicate a tendency towards fatalism, which appears to us to mark some of the developments of science in our day, and which is tantamount, of course, to a disposition to exclude the supernatural as an element from Philosophy. It is a tendency unfriendly, as we believe, to the best interests of science and of life. It leads to premature inductions, and to a presumptuous confidence that in Nature, as she now exhibits herself, we have a literal transcript of all the past and a minute circumstantial prophecy of all the future. It prevents us from remembering that all truth reached by induction, when made the basis of prediction and of prospective action, is contingent truth; that it becomes us not to say that on such a day of such a year a certain phenomenon *must and will be observed*; but that if God so will, or if existing circumstances remain unchanged, such phenomenon will occur. It gives us, too (this exclusive reference to fixed laws), an extravagant estimate of the value of our own knowledge, leading us to forget that any formula which the most profound philosopher may have constructed in order to embody facts, comprehends, after all, but a portion of the truth, and that there are countless facts not yet explained by any philosophy. It sometimes contributes, too, to engender among scientific men a narrowness of mind which undervalues all other pursuits, and looks upon inquiries not pertaining to their favorite study as barren and unprofitable. It is, in fine, a tendency which, though most apt just now to infect physical science, will be likely to spread itself insidiously through the different branches of mental philosophy, and thus lead to the confounding of two worlds—

the natural and moral—which ancient philosophers were most anxious to keep asunder, while its influence in theology will be seen in an increasing disposition to eliminate the supernatural as well from the Bible as from nature. If such be the spirit and tendency of these views, we need not add that they must have the effect of obscuring our perceptions of God and of his agency,—leading us to refer it all to the beginning of the system; or, if we recognize his present agency, leading us to view it as an agency restraining itself by unalterable laws,—enslaved, in truth, to its own irreversible system, just as the ancient poets represent the gods as striving in vain to save Cæsar when his ruin had been decreed by an invisible and irresistible fate,—a fate that ruled absolutely over Divinities as well as over men. Need we add, that with such views of God there can be little of filial confidence among his creatures,—little of that life of faith which, in the midst of the world's vicissitudes, is the happiest as well as the noblest of lives, and little of that love that casteth out fear and is the spring of a service which is perfect freedom?

IV. SCIENCE AND RELIGION.

Before unfolding the doctrines of Natural Theology by the aid of Science, we shall offer some further general remarks on the *connection between Natural and Divine Truth*, or, in other words, on the Relation between *Science and Religion* or between *Philosophy and Theology*, understanding by the former the aggregate of various systems of Natural Knowledge; by the latter the aggregate of various systems of religious doctrine, whether inspired or uninspired,—Christian, Jewish, or Pagan.

It is a subject both difficult and important. In the history of the past few things are more striking than the changes which have taken place in the relative bearings of Science and Theology. In the East (Asia especially) they have generally

been blended, and in most instances confounded,—Theology taking the initiative and maintaining the ascendancy, and Philosophy unfolding itself no further than might suit the tastes or subserve the views of a reigning priesthood. In the West, from very early periods, philosophy seems to have had a more independent existence, and to have dwelt less and less, as it advanced, upon theological views, though those views can always be traced, even in the schools of Grecian sages, modifying the prevailing spirit and tendency of speculation. Under the Roman Empire philosophy, whether employed in assailing or in vindicating Christianity, partook largely of the theological spirit, being sometimes paramount, but generally subordinate, to religion. During the earlier half of the Middle Ages Theology, under the auspices of an educated clergy and in the midst of general ignorance and barbarism, became altogether ascendant, and philosophy could hardly have been said to exist. In the later parts of the mediæval period there was a gradual separation of the two, though Theology still struggled, with the aid of Aristotle, to retain the human mind under its exclusive authority. The Reformation, aided as it was by the Revival of Letters and by the advance of Physical Science, contributed much to emancipate thought, and thus to cultivate a spirit of free inquiry in Philosophy as well as in Theology,—a spirit which degenerated, however, too often, as might have been expected, into licentiousness.

Ever since that era each has been struggling for a separate existence, yet neither has been willing to surrender its claim to control and direct the other. So many topics are common to both that, whether the point of departure be theological or philosophical, we necessarily soon reach a common ground, and on that ground these two powers often encounter with passionate animosity. Instead of each leaving to the other its own peculiar jurisdiction over such questions, both are anxious for the mastery, and each would dictate to the other by what rules it shall interpret and reason, and to what results

it shall attain. Hence the oscillating tendencies which may be observed since Bacon's time,—perhaps we ought to add through all time,—now towards a philosophical theology, now towards a theological philosophy. When, under the auspices of some great master like Locke or Kant, philosophy becomes an object of universal interest to the thinking world, its expounder is recognized as Supreme Legislator of thoughts, and men of every profession, sacred or secular, are expected to conform their methods of reasoning and study to his high decrees. On the other hand, let a great theological mind arise like Augustine or Anselm, Calvin or Edwards, and he impresses a deep theological dye on Philosophy and Literature. Thus, at one time we find a rationalistic or skeptical spirit pervading theology, just as at another time we find a high supersensuous and religious tone pervading philosophy. All this, however, is not without collision and conflict—many minds resist with vehemence. Passions are roused and mutual denunciations hurled abroad, yet the current sets steadily forward, till, startled at the portentous visage of their own opinions, as seen in an ally or as portrayed by an adversary, men recoil under some new leader and recommence a similar cycle of debate and denunciation.

He must have overmuch confidence in his own sagacity who can hope to arbitrate between these conflicting claims of Science and Theology. While charges of Atheism or impiety on the one hand are met by accusations of ignorance and superstition on the other, it is evident that neither is in a temper to accommodate or compromise differences. But we may predict what means, though often tried, will prove insufficient to this end, and we may at the same time suggest a remedy which might be simple and efficacious. It is sometimes proposed that all attempts to reconcile Science and Religion shall be abandoned, the naturalist holding, perchance, that it is impracticable,—the supernaturalist, that the very attempt is an indignity to the sacred interests of Religion. Such persons

forget that the attempt to harmonize different systems of truth is one from which the human mind cannot refrain, since it is an innate and irrepressible conviction of that mind that all truth is one, is pervaded by some all-comprehending principle of unity and correspondence; and it can never rest till that bond has been discovered and every branch of human knowledge has been made to take its place in some symmetrical system. This striving after unity in truth is probably but an effort to vindicate the unity of God himself, and may spring from an intuitive perception of that great religious truth. These same persons forget, too, that the attempt to divorce entirely these two great branches of knowledge from one another would, if successful, be fraught with evil to both. Science, pursued without reference to Religion, tends downwards to skepticism, fatalism, and sensualism. Theology, studied without regard to the principles of a sound philosophy, becomes loose, dogmatic, and intolerant.

On the other hand, any attempt to amalgamate them must prove hereafter, as it has always proved, injurious to both. If Religion, considered as a mere theory and as distinct from practical piety, predominate, it will render Science timid and time-serving, or wild and unmethodical. If Philosophy predominate, Religion will become its supple slave, and instead of speaking to man in tones of solemn authority, it will aspire only to the rank of humble counsellor; man will become the god of his own idolatry, and religious faith but the assent of his understanding to its own independent perceptions or deductions.

It is believed that the only safe course is to leave each in undisturbed possession of its own province, and to encourage each to explore that province in the free use of its own methods and instruments,—the province of philosophy being, first, an inquiry into the grounds and principles of all truth; secondly, the investigation of particular truths in respect to second causes: the province of theology being an inquiry into

the existence, nature, and relations, to his creatures or to second causes, of the FIRST CAUSE. The methods or instruments of investigation in Philosophy being intuition, observation, and reasoning directed mainly, though not entirely, to Nature: the methods in Theology being intuition, observation, interpretation, and reasoning, directed both to Nature and to Revelation. All danger from the utmost latitude of investigation would disappear, if philosophers and theologians could remember a few simple facts. First, the philosopher should remember that though it is his province and privilege to investigate causes and first principles, he always remains a moral and accountable being, and that he is solemnly bound to render judgment according to evidence, without fear, favor, or partiality; that he cannot approach so high a duty properly unless he have a serious and candid frame of mind; and that, as the human soul is finite and the world of truth infinite, he cannot fail, whatever line of investigation he takes, to reach ere long some limit beyond which all will be vague conjecture or presumptuous dogmatism, and that at that limit he must be content to wonder and adore. If God has spoken, however, on such subjects, he must be willing to bow in implicit faith before an understanding which cannot err and will not mislead. On the other hand, the theologian must recollect that though it is his province to study the highest of all themes, and to do it with the aid of peculiar light, he still remains a rational being, the processes of whose mind, if they would conform to truth or carry conviction to others, must be directed by the same logical and philosophical rules that direct the humblest inquirer. If these two maxims, simple as they appear, were once observed, all occasion for conflict between Philosophy and Theology would gradually disappear; it would be seen that, though each has its own independent domain, they still co-operate in one common pursuit of truth, and that each can render to the other most essential aid, while it has nothing to apprehend from that other's growing favor.

with men, or its extended and still extending influence in the realms of knowledge and thought.

To render this more apparent we will consider for a moment the relations of Science both to Natural and to Revealed Religion.

Let us premise, however, that by Science or Philosophy (for I use the terms here as synonymous) we understand the whole sum of human knowledge and speculation, as the same has been gathered and digested into books and systems by the learned and wise. There is an immense amount of practical wisdom which has no definite place in books or systems, though it is exceedingly useful in life. This, of course, is not comprehended in what we here term science or philosophy. As the result of all researches and investigations up to this time, there is an assemblage of truths and of approximations to truth respecting man and nature which is far from constituting the one only system of universal truth, but which must approach to it nearer in proportion as reason has been developed, in proportion as the principles and true ends of philosophy have been comprehended, and the methods and instruments of investigation perfected and applied. To this assemblage of truths and theories we give the name of Science or Philosophy. It comes before us under different phases. In one school it confines itself to the positive and phenomenal,—to that which can be ascertained and verified by precise inductions from observed facts. In another, there is more dependence on intuitive notions, on instinctive feelings, and irrepressible beliefs. It deals less with facts and observed connections,—more with ultimate causes and principles; and has, on that account, gained the name sometimes of metaphysical or speculative, sometimes of spiritual or transcendental, philosophy. Each of these again has two phases. On the one hand, Inductive, or, as it is sometimes called, Empirical Philosophy,—the philosophy of facts clearly represented to sense or to consciousness,—may repudiate all innate ideas and spontaneous

emanations of thought with Locke in mental philosophy or with Comte in Physical Science; or it may insist upon them with Coleridge while treating of the former, or with Whewell while exploring the Philosophy of all the Inductive Sciences.

So metaphysics may confine itself to the sensuous with Aristotle or embrace the supersensuous with Plato.

In religion we shall find the same diversity,—some being disposed to approach it primarily with the understanding, and to scrutinize it in a free and critical spirit; others being inclined to contemplate it mainly through the medium of the sentiments and affections, and with a reverent, unquestioning spirit. Each of these systems—whether of Science or of Theology—will be likely to come into conflict with its counterpart or antagonist. Positive physical science and metaphysical philosophy often evince the want of mutual sympathy in respect to each other. In like manner spiritual or ideal philosophy, whether applied to the inductive sciences or to metaphysics, looks down with contempt on the merely empirical and physical; and the latter is not slow to reciprocate the scorn. So it is with what may be termed the spiritual and rationalistic schools in theology, though here again there is a marked difference and want of congeniality between those whose reverence is directed toward the divine authority of Scripture simply and those who adopt any visible exponent of the Word. Whether in tradition or in Church authority, as among the rationalistic, there is a wide difference between those who would apply freely to the investigation of religious truth, bowing, however, always to the clear decisions of Revelation, and those, on the other hand, who think those decisions, however clearly defined by the laws of exegesis, may still be modified to render them congruous with the independent deductions of reason and experience. In the attempt to harmonize Science and Religion, these opposing tendencies in each must evidently complicate the problem. It is worthy of remark, that hitherto each has suffered quite as much from

the rashness of friends as from the violence of foes. The fondness of the philosophic world for its own theories and speculations has prompted it to slight the claims of Revealed and Natural Religion, as, on the other hand, the hasty and unmeasured resentment which good men have conceived against the bold conclusions of Science have tended to diffuse and perpetuate a dread of philosophic studies.

The friends of Revelation, too, in their anxiety to avert what they consider imminent danger to precious truth, sometimes hazard interpretations of the sacred volume which are untenable, and lay down dogmas in Science which betray the utmost degree of ignorance and presumption.

On the opposite side, the votary of Science displays a flippancy, in regard to Revelation and the protests and reclamations which its friends advance, that evinces equal arrogance and weakness. Happy the man whose comprehensive mind and generous love of truth dispose him to accept of light from whatever quarter, and who believes that whether it flow directly from the sun at noonday or come to him after being reflected from other objects celestial or terrestrial, or though it be shed upon him from a glimmering taper, it is essentially the same elemental substance, and is ever the enemy of that darkness which is but another name for evil ! And he is strong in the confidence that ultimately truth of every kind will be found to harmonize with truth,—that Natural and Supernatural will be found radiant alike with blessing to man and Glory to God.

I. SCIENCE AND NATURAL RELIGION.

What, then, is the relation between *Science* and *Natural Religion*? It is becoming common for scientific writers to represent Natural Theology as a superstructure raised on the sole basis of scientific inductions, and especially physical inductions. Thus Powell, an eminent mathematician, in his work on the *Connection of the Natural and Divine Truth*, declares in terms that “the speculations of physical science afford the

only legitimate and substantial ground on which a reasoning inquirer can build his most sublime proofs of the existence and attributes of the Divine Being." "In rejecting," he says, "the evidence of inductive science, we are rejecting that of Natural Theology." If he had said that *when* we employed scientific induction as the basis of our reasonings in Natural Theology, the validity of the latter must depend upon the legitimacy of the former, no exception could be taken to his views; but his language evidently implies much more than this: it implies that science, and especially physical science, affords the only "rational" grounds for Natural Theology. Who does not see the fallacy of this position? Were mankind utterly without valid proofs of the Divine existence and attributes until modern Inductive Science had supplied them? Was it only sophistry that convinced the sages of old of these great truths? When Socrates, in his conversation with Aristodemus, so clearly expounds the argument from final causes, was that argument essentially vitiated by his ignorance of the doctrines of modern *Astronomy* or *Geology*? or was it necessary that he should have been familiar with the discoveries and speculations of modern *Physiology* before he and those who heard him could be certified of the logical soundness of the following argument? "Is not that Providence," says Socrates,—as reported in the *Memorabilia*,—"is not that Providence, Aristodemus, in a most eminent manner conspicuous, which, because the eye of man is so delicate in its contexture, hath therefore prepared eyelids, like doors, whereby to secure it,—which extend of themselves whenever it is needful and again close when sleep approaches? Are not those eyelids, provided as it were with a fence on the edge of them, to keep off the winds and guard the eye? Even the eyebrow itself is not without its office; but as a penthouse is prepared to turn off the sweat which, falling from the forehead, might enter and annoy that no less tender than astonishing part of us. Is it not to be admired, too, that the ears should take in

sounds of every sort and yet be not too much filled by them? that the foreteeth of the animal should be formed in such a manner as is evidently best suited for the cutting of its food, as those on the side are for grinding it in pieces? that the mouth, through which this food is conveyed, should be placed so near the nose and the eyes as to prevent the passing unnoticed whatever is unfit for nourishment, while Nature, on the contrary, hath set at a distance and concealed from the senses all that might disgust or in any way offend them? And canst thou still doubt, Aristodemus, whether a disposition of parts like this should be the work of chance or of wisdom and contrivance?"

Happily the tokens of Divine existence and perfection have been written so plainly on the face of Nature that he who knows little of the wonders of Inductive Philosophy can still assure himself of the great truths of Natural Religion. The harmony and order which evidently characterize so many of the changes around him, and the marks of intelligence and wise adaptations which abound everywhere, are conclusive, and justly conclusive, with thousands who know nothing of Science. Otherwise, men's power of discerning God, and the obligations which result from our relations to Him, would depend on their geographical position or on the age in which they live. They who now live without the circle which separates the civilized from the uncivilized portions of the Earth, or they in Christendom who died before the discoveries which have rendered modern philosophy so illustrious, would be able to justify their unbelief and impiety by their ignorance. Not so reasons Paul; for, says he, speaking of ancient Pagans, "the invisible things of God are clearly seen, being understood by the things that are made." Not so reason even the rude barbarians who dwell amid Arctic snow. Said a Greenlander, "It is true that we were ignorant heathen, and knew little of a God till you came; but you must not imagine that no Greenlander thinks of these things. A kajak (boat),

with all its tackle and implements, cannot exist but by the labor of man, and one who does not understand it would spoil it; but the meanest bird requires more skill to make it than the best kajak, and no man can make a bird. There is still more skill required to make a man! By whom, then, was he made? He proceeded from his parents,—they from their parents; but some one must have been the first parents. Whence did they proceed? Common report says that they grew out of the earth. If so, why do not men still grow out of the earth? and whence came the earth itself, the sun, the moon, and the stars? Certainly there must be some Being who made all these things,—a Being more wise than the wisest man."

But would we teach that Natural Theology, because not entirely dependent on Inductive Philosophy, is therefore altogether independent of all Science and all Philosophy? Far from it. It may be greatly indebted to several branches of Philosophy, and needs their aid. It needs, for example, the aid of logic to scrutinize its grounds and methods of reasoning, and to exclude those fallacies which not only vitiate its conclusions but awaken prejudice in the minds of acute and thinking men. It needs the aid of Inductive Science, whether physical, intellectual, or moral.

Every general law established by induction in some way illustrates an attribute of the Deity, and thus adds strength and impressiveness to the simple arguments furnished by ordinary experience. The more comprehensive these generalizations become, the more do they tend to teach the unity of the Divine Mind, and the wider the space over which they sweep and the remoter the periods in the dim past to which they conduct us, the more conclusive the inductive proofs they furnish of the Divine immensity and immutability. A simple fact, such as the structure of a reed or quill, might teach Galileo the existence of a God; but it needs those sublime inductions which were built up by his memorable labors, united with

theirs who preceded and followed Him. It needs these to fill the mind with yet more worthy thoughts of the Being who planned and built and still maintains a universe so glorious.

Hence it is perfectly true, that with every advance in Inductive Philosophy new light will be cast on the doctrines of Natural Religion. The evidence on which they rest is already sufficient to command assent; but their outline embraces vast space and a boundless multitude of objects and truths. In proportion as these are better understood they will be found more and more rich in striking illustrations of truths already received, but with a too torpid acquiescence,—truths which need the light and interest of such illustrations to verify them and to make them objects of cordial regard. Hence the argument of Natural Theology, although complete in its essential parts, will need to be reconstructed from time to time, that it may embody these new discoveries of natural truth. The rapid progress of physical and physiological Science, since Paley's time, has justified the reproduction of his admirable work, with copious notes, embracing recent discoveries by Lord Brougham and Sir Charles Bell. The same cause has given birth to the Bridgewater Treatises, which aim, especially, at an application to religious uses of the triumphs that have been won, during the last century, in every field of inductive inquiry,—more particularly in that which is physical. These must in their turn become in a measure obsolete, as Chemistry, Physics, and Physiology gain new positions and a deeper insight into nature, though no lapse of time can shake the justness of much of their reasoning nor the pertinency and beauty of many of their illustrations. The progress of Moral and Social Science supplies in like manner a new fund of material from which writers have not yet drawn with much copiousness, though it is in many respects pre-eminently fitted to furnish impressive and convincing proofs of the moral perfections of the Deity, of the solemn relations He sustains to us, and of the retribution we may expect at his hands. Let

us, then, welcome each new laborer in a vineyard which cannot be too well tilled, and which is destined to yield riches not yet conceived of in our philosophy.

It has been objected to this extended array of natural truths in illustration of the Divine character and will, that it is superfluous, since "the simple argument of Cicero, with his slight physiological knowledge, is as convincing (says a writer from whom I quote*) as the minute treatises of Paley and Buckland, and, indeed, more so, since the array and minuteness of proof in the treatises of the latter authors are apt to engender that very skepticism which they were designed to cure." The same writer contends that "much attention to that evidence which we derive from Physical Science is indicative of a skeptical rather than a believing age." And he stigmatizes the attempts which are often made to demonstrate the harmony of the Bible with Natural Science "as attempts that can only provoke the sneer of the sagacious infidel, regarding them, as he must, as evidence of an uneasy, dissatisfied faith." To these remarks, which imply a threefold objection, we answer—1st. That though the argument of Cicero may have been conclusive, its brevity prevents its full effect on the mind; and that hence we need the copious instances furnished by modern writers, and especially by modern scientific discoveries, to awaken attention. We need them not so much to prove as to render proof impressive and influential. As to the tendency of an array and minuteness of proof to engender skepticism, this will depend altogether on the manner in which the arguments are stated. If they are put forth timidly, as if the author felt at every step that he is treading on doubtful ground, the effect may well be such as the objector alleges. But how is it with Paley? Does he write in this spirit? To use his own language: "Were there no example in the world of contrivance except that of the eye, it would be alone suffi-

* Dr. Tayler Lewis.

cient to support the conclusion which we draw from it as to the necessity of an intelligent Creator." "The proof is not a conclusion that lies at the end of a chain of reasoning, of which chain each instance of contrivance is only a link, and of which if one link fails the whole falls, but it is an argument separately supplied by every separate example. An error in stating an example affects only that example. The argument is cumulative in the strictest sense."

2d. In ascribing the many works of the present age on Natural Theology to a skeptical rather than to a believing spirit, the critic seems to have overlooked one or two important facts:—First, the amazing progress of natural Science during the last half-century has contributed to render earlier works on Natural Religion obsolete. In the second place, in view of this progress of physical science there would arise among good men a natural desire to render it subservient to the honor of God; and how could this be done so well as by exhibiting Science as the handmaid of Religion? It was no uneasy, dissatisfied faith that led Mr. Lowell and the Earl of Bridgewater to make their munificent offerings to this cause. On the contrary, the one expressly declares in his will as his motive for founding these Lectures, his deep conviction that "the most certain and the most important part of true philosophy is that which shows the connection between God's Revelation and the knowledge of good and evil implanted by Him in our nature." The other, a clergyman of the Established Church of England, firm in his faith, seems only anxious that science and learning—"discoveries, ancient and modern, in arts, sciences, and the whole extent of literature"—shall have the privilege of serving before the altar of the Christian's God. In the third place, let me remark, that the skeptical writings of the last century—combined with other causes—had imbued many of the students of physical science, especially on the continent of Europe, with the poison of infidelity; and that poison was but too apt to distill through

their writings. They were by no means slow to insist upon every development in Nature which might be made to appear inconsistent with Christianity or with the doctrine of final causes as applied to religion. To neutralize the effect of these speculations required such works as this objector reprobates,—works in which we have a spectacle that one might suppose would cheer any devout mind,—the spectacle of men eminent among the Mathematicians, Astronomers, Chemists, and Naturalists of the age consecrating their science and their fame to the service of religious faith. If this be an age, as is said, of unprecedented devotion to physical studies, and if the tendency of such studies be, as is also alleged, to sensualize the mind and rob it of its highest aspirations, ought we not to hail every effort to counteract such tendencies, and show that jewels can be extracted even from the head of the most unsightly reptile? The writer to whom I especially refer reprobates the supercilious air so often assumed towards our faith by Physical Science, as if she were an all-important auxiliary, or the only sufficient defender of Religion. Let that arrogance be rebuked, but let no disposition which science may display to devote her powers to the upbuilding of God's Temple be repressed. Instead of denouncing such multiplied attempts, let us rather welcome them as indications of a growing sympathy between two most powerful agents in the great work of human improvement,—as a reaction against that skeptical spirit which not long since made the terms *Savant* and *Atheist* almost synonymous in France, and too often applicable to the same persons in England. The man of science will never want respect and sympathy in the ranks of unbelief. Conscious that their cause is at war with the prevailing sentiments and the traditional convictions of mankind, they look for countenance and support to philosophy. That they have seemed to find it so frequently may be ascribed, perhaps, as much to the ill-judged opposition which science has encountered at the hands of theologians as to any inherent tendency

of science itself towards skepticism. If the man whose life is spent in the laborious investigations of inductive philosophy, in an honest endeavor to enlarge the domain of human knowledge, and thereby extend our moral and physical resources; if such an one receive only reproach and malediction from those who claim to be the peculiar friends of Divine truth; if he find his motives misconceived, his labors undervalued, and the whole spirit and tendency of his pursuits misconstrued,—is it strange that he should feel some disgust at the injustice? And when, on the other hand, he turns towards the hosts of Infidelity and finds that they cheer him forward with smiles and loud applauses while they proclaim themselves the exclusive friends of free inquiry, is it strange that he should sometimes feel tempted to cast in his lot with those from whom at the very moment his deepest and most sacred sentiments bid him recoil? Groundless jealousy, among the good, in regard to the proper tendency of scientific studies, has already done infinite mischief alike to Religion and to Philosophy. But this mischief it can do still more effectually and fatally in our day. Physical Science has become a palpable and prodigious benefactor of mankind,—its benefits are augmenting daily; it has quadrupled the power of human industry, and added immensely to the practical efficacy of every kind of talent. The mass of men are now convinced that it is an auxiliary whose services are not only valuable but indispensable. Is it wise to call upon them to regard its methods and researches as the enemy of sacred truth, or as an ally whose fidelity is always to be suspected? How many revolting against such appeals may find themselves tempted to prefer the present and palpable good proffered by science to the spiritual and invisible, though infinitely nobler, blessings proffered by Religion! What multitudes of the ignorant and unreflecting have already been driven into the foul embrace of irreligion by hearing that science lauded by Infidels which they have heard stigmatized by believers!

Were this the injudicious course of the bigoted and blinded alone, it would threaten less injury; but, unhappily, their senseless cry is sometimes caught up and echoed by the learned and thoughtful. There is a mystical theology,—the natural reaction from a cold and rationalizing system,—which persuades itself that it does God service even when denouncing God's truth, should that truth have been discovered without the limits of the Christian fold or by methods not theological or transcendental. They regard theology or metaphysics not only as the paramount study, but as that which may claim rightful jurisdiction over all other studies; and they look on inquiries into physical causes as having a necessary tendency to unspiritualize the mind and to fill it with pride and self-conceit. How are they to be disabused of this mournful mistake? How is the mischief that they are about to inflict (none the less effectual because their intentions are good) to be averted? How is the skeptic to be deprived of the exceedingly specious argument which he finds on the fact that he is a better friend to philosophy and science than the Christian? How are the ignorant and unreflecting to be won back from the sore delusion now possessing so many,—that if they admit religious faith to a dominion over their minds they must forego the benefits and prospects which they associate with advancing Science? How are they to be established in the conviction so just, so accordant with all reason and all history, that our holy religion is the friend of all truth,—the generous patron alike of Science and of letters.

I answer, that the means are various; but among them I cannot but reckon as important the study of Science in reference not only to *physical* but also to *final causes*. We should be taught to see in science not only *laws* but *adaptations*, and these adaptations should be considered not only in themselves, but as tokens and *evidences of a designing mind*.

I am well aware of the confusion which was formerly introduced into Inductive philosophy by mistaking final for

physical causes, by supposing that we had accounted for phenomena when we had discovered their uses or adaptations. But all danger from this quarter is at an end. The distinction between these two causes, so clearly pointed out by Bacon, is now so rooted in the minds of educated men that there is hardly a possibility of its being lost, and all the methods of reasoning and research in physics tend to perpetuate it. The danger now is from the opposite quarter. When Sir Samuel Romilly called on Diderot in Paris, the latter complained that the English mingled theology with philosophy. It was necessary, he said, *abrir la théologie*. After mentioning the almost universal prevalence of Atheism among the philosophers of France, he added, that Chancellor Bacon was one of the greatest men England ever produced, and that Bacon said, "*causa finalis est virgo Deo sacrata quæ nihil parit.*" It is easy to perceive here an entire misconception of Bacon's remark. In imputing barrenness to final causes, the founder of modern philosophy had reference only to their power of unfolding physical truths,—they were barren in respect to a knowledge of physical laws. But Diderot would understand him to affirm universal sterility, whereas from the very sentence he quotes it is evident that by speaking of them as consecrated like the vestal virgins to the service of God, Bacon would intimate that they had a high office, even that of keeping alive in the human heart the flame of religious faith, and of leading our thoughts towards that great Being who has thus made every object and every event expressive of his character and will.

Recoiling from the confusion produced by misapplying final and neglecting physical causes, philosophers have tended, during the last century, towards the opposite extreme. In Physics, they have omitted the consideration of uses and adaptations almost entirely, and in Physiology they have rarely risen above them to the proofs which they offered of Divine Intelligence and Goodness. To theologians and others

writing professedly on religious subjects, they have left it to make those applications of physical truth to illustrate the Divine glory, which can hardly ever be misplaced, and which have peculiar force when they occur in scientific works, and in immediate connection with the orderly exposition of laws and principles. It will be an auspicious day for Religion and for Science when this practice ceases and the scientific writer recognizes his high office as an expounder of laws emanating at first from an Almighty and All-wise Legislator, and still directed by his Providence and pervaded by his energy. Such a course will do much to wipe away the reproach which now rests on Science by reason of her silence in view of the greatest wonders she unfolds. It will accustom the student of Nature to retain God in all his thoughts, and to cultivate that reverent and yet earnest and searching spirit, which is the surest guarantee of successful inquiry.

The doctrine of final causes—the idea that every part of the living structure, for example, has an end and use—has proved, in our time, to be the great torch of Physiologists. It has guided a Harvey and a Cuvier to their noblest discoveries; and just in proportion, it seems to me, as the inquirer recognizes the Divine will in these adaptations and endeavors to catch their prevailing spirit, just in that proportion will they serve as a clue to new discoveries. When he stands on the line that separates the known and the unknown, and is about to set his foot on untrodden ground,—is about to draw aside the veil that man's eye has never yet pierced,—what an awe falls upon his spirit! How lightly does he tread, as if the place were holy! and with what trembling hand does he expose, even to his own view, these hidden mysteries! What is this but a secret, unbidden consciousness that something more than dead nature is before him? and why should not a rational being like man—especially when he devotes himself to study—recognize, of choice and habitually, that Divine Presence which he cannot altogether forget?

In order to cultivate such a spirit as I have here noticed, we need works which discuss adaptations as well as laws, and which set forth these adaptations as significant tokens of the Divine hand. It is true that such adaptations have been unfolded to a greater or less extent in all the works on Natural Theology since the time of Ray and Desham. But these works are, in a great measure, fragmentary. Each writer presents so much of science only as may suit his more immediate purposes, and this he presents in relations very unlike those which the same truths maintain in regular systems of Inductive Philosophy. Such works as I suggest would exhibit the principles of each branch of knowledge in their regular order, and with simple proofs of each principle would connect extended illustrations of its uses and of the light it casts on the Divine Character. It would cultivate in the reader that habit of seeing God in everything, which is the most essential element of true piety. It would transform Inductive Science from a science of things to one of persons,—causing it to speak to our affections, and even to our conscience. It would exhibit to us the material world, not merely as it is in itself, but as it is in its relations to God,—its master-builder and keeper—and to man, and countless other beings, its tenants,—tenants endowed, some only with faculties to feel and enjoy, others with faculties to investigate and act as well as enjoy. It would thus invest physical laws with an inexpressible moral interest, and put into every object and event a tongue that would plead with touching and solemn eloquence for God and duty.

Such an alliance between Science and Religion could injure neither, and would benefit both ; it would involve no sacrifice of the independence of either. Science, by the rigorous use of her own methods, would ascertain facts and laws. Religion would trace these laws in their connection with their great Author. Science would supply to Religion illustration and arguments. Religion would repay the debt by shedding on Science her own humble and yet earnest spirit. Science would

serve, but with a service which is perfect freedom. Religion would command, but with an authority that seems to delight in condescending,—in ministering rather than in being ministered to. It would be union, yet each would retain its own rights and prerogatives; it would be co-operation, but the co-operation of independent powers,—each sovereign within its own limits, but each rejoicing to offer homage to a common Parent and to each other. The skeptic would see in its proof that he can hope nothing to his cause from the swelling triumphs of Inductive Philosophy. The mystic would be convinced that the most spiritual form of Christianity can incur no danger from a study of the natural, which serves thus directly to lead the mind to the supernatural. He would see that "next to the word of God the most certain cure for superstition," to use the language of Bacon, "as well as the most approved aliment of faith, is Natural Philosophy. Well, therefore, has it been given to Religion as a most faithful Servant, since the one makes known the will, the other, the power of God." The philosopher would be reminded continually that there is something higher than his sublimest generalizations, and the theologian would be taught that he can borrow from philosophers art and skill whereby to turn over page after page of new revelations in respect to God's eternal Power and Wisdom. In the language of Boyle,* "Natural Philosophy, like Jacob's vision, discovers to us a ladder whose top reaches up to the footstool of the throne of God." "Let no man," says Bacon, "upon a weak conceit of sobriety or an ill-applied moderation, think or maintain that a man can search too far or be too well studied in the book of God's word or in the book of God's works; but rather let him endeavor an endless progress or proficience in both, only let men beware that they apply both to charity and not to swell-

* Vol. i. p. 458, fol.

ing,—to use and not to ostentation; and again, that they do not unwisely mingle or confound these learnings together.”*

SCIENCE AND REVELATION.

Having offered some remarks on the Connection between Science and Natural Religion, we proceed now to examine the relation of Science to Revealed Religion.

It involves questions of greater delicacy and complexity than any we have yet noticed: how far Science is bound to defer to Revelation; how their teachings, when seemingly discordant, can be reconciled; whether either has anything to apprehend from the prevalence and extension of the other. These are questions which have been often and earnestly discussed, but they have not received a full solution.

As usual, the most extreme and contradictory opinions have been maintained. Some, like Hutchinson and his followers (Bishop Horne, Jones of Nayland, and Parkhurst), have taught that the Scriptures are a text-book not only in Religion and morals, but also in Natural Philosophy, and that by the light which Revelation affords, compared with their own observations, they were able—to use the language of Bishop Horne—“to see farther into the constitution of the Universe and the operations carried on in it than Sir I. Newton himself had done.”† The same spirit may be recognized in some of the speculations of Biblical Geologists in our own day. On the other hand, it is maintained not only by skeptics but by some Christian philosophers, that to “expect or to wish to find in Scripture any confirmation of the results of inductive Science to attach importance to the accordance between the descriptive or poetical language of the Bible and the conclusions of philosophy on the one hand, or to consider the

* Bacon’s *Advancement of Learning*, Book I.

† Bishop Horne’s *Works*, vi. p. 445.

want of such accordance as any objection on the other,—to seek to prop up the credit of the sacred writers on the verbal coincidences with physical results or to deny that there is essential discrepancy, is absurd, and that the best way is boldly to front the difficulty and avow the contradiction in plain terms.”*

Between these extreme opinions writers will be found inclining to one or the other in every degree of approximation. To the most dispassionate and impartial inquirer the subject cannot but present itself under two aspects not easily reconciled. Recognizing the inspiration and Divine authority of the Scriptures, we cannot brook the suggestion that they contain material errors; yet, in proportion as we study the laborious inductions of modern science, we cannot but perceive the apparent incompatibility of some of its results with the most generally received meaning of certain passages in the Bible.

The difficulty is real, and can hardly fail, at times, to be embarrassing and painful. To dismiss it with the summary remark that the Bible was not given to teach us physical truth, or that those of its passages which are at variance with the conclusions of science are figurative, or are mere accommodations to prevailing belief, is but meagre satisfaction. In proportion as the believer feels that the Scriptures are of inexpressible importance to him and to mankind, in the same proportion must he be jealous of their fair fame as oracles of God, and he cannot but look with solicitude on any portion of them which sets forth not merely as phenomenon but as fact that which science (physical or mental) confidently declares to be impossible. He cannot be dismissed with the trite assurance that the Bible was intended to be a teacher of moral and religious truth only; for he knows not how far the physical facts in question may be connected with moral truth.

* Powell's Connection of Natural and Divine Truth, pp. 237-247.

On the other hand, the unbeliever is but too ready to fasten on these apparent discrepancies,—to magnify them into radical and irreconcilable contradictions, and to proclaim them as convincing evidence that the Bible is a book of fables, and that its long-usurped authority must soon fall before the advancing light of Inductive Philosophy.

Nor have such appeals been made to the Physical Sciences only,—History, Archæology, Poetry, Philosophy, Hermeneutics, all have been appealed to for ground and occasion of assault against the sacred Records; and too often the onset is made with a malignant impetuosity witnessed nowhere else in literary warfare. When, for instance, the statements of Scripture have come into conflict with those of profane authors, a course has frequently been pursued utterly inconsistent with candor and justice. It has been taken for granted that of the two conflicting witnesses, the Biblical witness must be wrong and the secular witness must be right; that both are entitled to be judged by the same rules; that the *a priori* presumption is at least as strong, for example, in favor of the Father of sacred as in favor of the Father of profane history; that, until convicted of forgery, Moses may claim as much at least of credit as Herodotus. All this has been forgotten. Moses speaks, in the Pentateuch, of grapes and vineyards in Egypt, and his statement is corroborated by Diodorus, by Strabo, by Pliny, and by Athenæus; yet, inasmuch as Herodotus and Plutarch state that Egypt was without vineyards, their negative testimony was seized upon not only as sufficient to outweigh the authority of the sacred historian, but as sufficient to outweigh his authority with that of four profane historians superadded.* It is hardly necessary to add, that among the ancient subterranean inscriptions which have been lately discovered in Egypt, occur representations of the whole process of the vintage,—from the dressing of the vine to the drawing off of wine.

* Wiseman's Science and Revealed Religion, p. 300. Andover, 1837.

Before the freethinker exults in this anticipated triumph over the downfall of Revelation, would it not be well for him to take counsel of the past? That great teacher has instructive admonitions stored up for minds like his; she points to instances not a few in which some similar discovery has been trumpeted as fatal to Revelation; and the world has stood aghast at the prospect of its overthrow. Now, it was Brydone, reasoning from successive layers of lava, and inferring that twice the six thousand years which represent the age of the world, according to the popular understanding of Moses, must have elapsed since the first of those layers was deposited. Then it was the ill-fated French astronomer Bailey, proclaiming that in the ancient astronomy of India he had found conclusive evidence that it pointed to a period still more remote, and that tens of thousands of years would be needed to express the age of the world. To-day a sculptured zodiac is borne in triumph from the sandy plains of Egypt to the capital of France, and its inscriptions are made to utter another sentence of condemnation on the chronology of Moses. To-morrow the far-off realms of Cathay are appealed to in order to accomplish the same purpose. And what is the result? Christianity has not yet fallen,—its way has not even been retarded. The far-famed discovery has, in each case, fretted its brief hour on the stage and then gone, to take its place with the unnumbered phantoms that served to amuse the world before; for it has been found that its supposed discrepancy with Revelation was apparent only. Is it not well to learn wisdom from this chapter in history?

So, again, when we see philosophers who do not affect Infidelity, but who profess and call themselves Christians,—when such philosophers are found manifesting an anxious desire to displace the supernatural from the world which they observe,—striving, for example, to obliterate all marks of catastrophe from the physical history of the Globe, to substitute material for spiritual causes in explaining all the functions of body

and mind, and repudiating all appeal to creative power except at the beginning of the system,—of such philosophers we cannot help saying that they ought not to wonder should they find themselves objects of suspicion. They deliberately shock feelings and convictions, in regard to the ever-present agency of the Most High, which are deeply rooted in the human heart, and which men associate with their most cherished hopes. They often do this, too, without cause,—when the affront offered to old and venerable beliefs seems all but gratuitous. Philosophers might easily record observed facts, and reason upon them with the most rigorous logic, without thus obtruding conclusions or suggestions in regard to the Divine agency, which are at best but conjectural. More especially do they merit censure when, on the ground of partial observation and crude generalization, they hazard reflections upon the integrity or authority of Scripture,—when without pausing to ask whether the meaning attached to a particular passage by them, or by current interpretation, be not erroneous, they launch forth their theory of interpolated or uninspired admixtures with the sacred text, or make these discrepancies an occasion for calling in question altogether the Inspiration of the Bible.

Yet, on the other hand, the excessive sensitiveness with which Theologians and Christians frequently look upon these apparent discrepancies between the Bible and Nature might well be abated.

It would be, if they could be induced deliberately to weigh the following considerations :

1st. That the construction we put upon such parts of the Scriptures as are supposed to be at variance with science is not always above dispute. Nothing is more difficult than to lay down a Canon of interpretation which shall clearly define the distinguishing marks of that in the Bible which is literal as contrasted with that which is figurative or phenomenal.

As passages once received for literal are now allowed to be phenomenal (*e.g.* those which represent the earth as the centre of the solar system), so, on the other hand, passages which, in modern days, we regard as literal were in the earlier ages of the Church interpreted, by some of the most orthodox of the fathers, as figurative. (For example, the account of the six days of creation, which Origen, and to some extent even St. Augustine, regard as symbolic of the new spiritual creation.) We should remember, then, that both the book of Nature and the book of Grace are written in characters which are not yet fully deciphered; that neither Biblical nor physical interpretation is yet reduced to rules of perfect precision or of unquestionable authority,—the logic of induction being in its infancy according to one high authority,—the theory of Hermeneutics being in the same state according to another. So that while there is explicit teaching sufficient to guide every humble and sincere inquirer in the way of duty, there is still enough of obscurity to task the noblest powers of the theologian and the philosopher. In this imperfect state of natural and supernatural knowledge, a thousand apparent incongruities may embarrass us, which are destined to disappear before the advancing light of discovery as thousands have disappeared already.

We should especially remember that the language employed in the Scriptures is popular rather than precise or scientific,—that the sacred writers, in order to be intelligible, were obliged to employ terms and apply allusions according to the current usage, so that in referring to terrestrial or celestial appearances they would naturally represent events rather as they appeared to the ordinary observer than as they were in reality, their object being the phenomenal rather than the real.

2d. Should we not also consider that the main object of the Scriptures is to teach the supernatural as distinguished from the natural, the moral and religious as contrasted with the

physical and secular, and hence that obscurity must often rest upon the latter, which has been dispelled by the inspired word from the former?

3d. Should we not consider that in our present state we see as through a glass, darkly, that we discover enough of analogies and harmonies between the Creator's works and word to believe that all is bound together by one common bond of correspondence and consistency; while, on the other hand, apparent incongruities are permitted to rise before us, one after another, to task our investigating powers, to exercise our patience, to rebuke our intellectual pride, and to enable us to purchase that blessing above price accorded to those who not having seen yet believe? There is no science in which there are not apparent inconsistencies,—we might almost say irreconcilable contradictions. Is it not so in Mathematics, where we have it rigorously demonstrated that two lines can approach each other forever and yet not meet? Is it not so in Metaphysics, where we have a will determined by motive and yet free? Is it not so in Theology, where we have Divine Foreknowledge and yet a special Providence, Sovereignty in God and yet responsibility in men, Infinite benevolence in the Creator and yet evil and suffering among his creatures?

But, though Science and Revelation are essentially distinct as it respects both their methods and their objects, yet they can mutually aid each other. Moral Philosophy, Philology, Ethnology, Archæology, Physiology, Physics, each, by its own independent processes, reaches conclusions which tend to corroborate Revelation. The more thoroughly, for example, we consider *Moral Science*, the more evident it becomes that the great principles of Christian Ethics, whether applied to individuals or to society, are founded deep in man's nature and relations.

So the more thoroughly we explore the *languages* of the world, and trace their affinities and dependencies, the more

correctly we can interpret the inspired records, the more numerous are the coincidences discovered between profane and sacred literature, and the more striking the confirmation we receive of early Sacred History. So it is with researches into the *Natural History of Man*, and of the different races which have inhabited the Globe. Though they often suggest difficulties, they generally dissipate them in the course of a few years, while they supply the most striking and unexpected illustrations of obscure references in the Bible. And even *Physical Science*, whether it explore the vast or the minute, whether it trace mechanical and other actions on the surface of the earth, or away in the remotest regions of space, everywhere alike, as we shall see hereafter, it finds facts and analogies which lend new authority to our Sacred Books. Whatever protests may be entered against thus appealing to Science in support of Revelation, it is quite certain that it will continue to be appealed to in derogation of it. No stripling desires to have a tilt with Christianity that he does not invoke the aid of what he calls science; and the confidence with which he does so is usually in the direct ratio of his ignorance. Should the uninstructed be left to gather their impressions respecting the relation between Theology and Philosophy from him? Would those who remonstrate so earnestly against attempting to harmonize Science and Revelation require that the infidel should be allowed to poison his weapons at these fountains, while the believer may not supply an antidote? The skeptic may allege that profane history convicts the sacred writers of anachronisms; that physiology casts discredit on the narrative of our Saviour's resurrection; that geology and astronomy both carry us back to facts that prove either that Genesis is untrustworthy or that nature is untrue to herself. And may not the believer follow him to question his assertions? May he not examine the ground on which they rest, nor rejoice when they prove worse than baseless? Is it not well alike for science and for religion that the world has

thought differently? Impatient under such alleged discrepancies between the records of nature and of grace, they have demanded renewed inquiry as the basis of renewed and more thorough comparisons. To such inquiry the most profound scholars and philosophers have applied themselves, and the result is seen in immense accessions to the treasures of science and to the evidences of revealed religion. Had the opposite course been taken, the poisoned weapons would have been discharged,—many an uninformed or unsettled mind would have imbibed the “leprous distillment.” In the absence of any antidote, the contagion would have diffused itself silently, while Infidelity would have exulted over an impotence that could not answer, an apathy that would not, or a cowardice that dared not. Thanks to the wisdom and the manly courage that have espoused a different policy.

And let not the objector say that he would have Ancient History and Literature invoked in confirmation of the Bible; he only protests against the attempt to enlist Natural Science in this work. It would puzzle, I apprehend, the most ingenious of these objectors to draw a line of demarcation between questions which belong to Literature and Archæology on the one hand, and those which belong exclusively to Physical Science on the other. Take, for example, the controversies of the last century in regard to the astronomical systems of ancient India and ancient Egypt,—systems which were arrayed against the Bible. Could their merits have been thoroughly investigated by any except astronomers? The main points in debate were problems in regard to the past history of the Heavens, involving mathematical and archæological difficulties, which could be solved only by means of scientific calculations, combined with antiquarian research. Hence it was that many of the most eminent astronomers as well as archæologists of the time—Delambre, Montucla, Maserlyne, Bentley, Klaproth, Heeren, Cuvier—engaged in the discussion, and to their joint labors the world was indebted for

power to lay the portentous spectre that science falsely so called had evoked.

And as Science can aid Revelation, so on the other hand can Revelation aid Science. Considered merely as an ancient record, and without reference to its divine authority, the Bible has the highest value,—embodying as it does the earliest recorded traditions respecting the physical state and the moral history of our world. It also inculcates that spirit of humility and self-distrust, that patience and perseverance in the pursuit of the right and the true, which are hardly less necessary to success in scientific investigation than they are to eminence in virtue and piety. The devout study of Revelation must, moreover, fasten on the mind a conviction of the Divine unity, and a clear perception of the variety as well as uniformity of the Divine operations,—feelings which serve as instructive guides in philosophical inductions,—while the sense of an overruling Providence, which they keep alive, will continually temper the boldness of speculation. Then, again, obscure passages in Revelation have, in some instances, suggested inquiries which have proved rich in discovery, and even in practical benefit to mankind. It is not often, we must admit, that the Bible can be appealed to as affording formal and distinct instruction in Physics,—never as superseding the need of inductive investigation,—nor, when that investigation has been completed, will it be usually safe to appeal to the language of Scripture, in so many instances figurative and popular, as sufficient corroboration. Still, the sacred text may suggest salutary doubts; it may inspire caution. Often it may furnish important collateral information. It may animate to further inquiry, and thus, through the joint agency of physical inductions on the one hand, and of Biblical interpretation on the other, lessons which we read in the pages of Nature and of Revelation will be found, we doubt not, to harmonize more and more; and the day may come when even man, a stranger and pilgrim on the earth, with the most

contracted sphere of observation, shall hear but one anthem of praise ascending to God from all his works,—when the strains that go up from the Temple of Science shall blend sweetly with those that go up from the Temple of Grace, and all be lost in the swelling chorus, “Great and marvellous are thy works, Lord God Almighty,—just and true are thy ways, thou King of Saints!”

In the mean time, let not the friends of Revelation insist too strenuously on their own interpretation of disputed texts. “In obscure matters,” says St. Augustine, quoted by Whewell, “and things far removed from our senses, if we read anything, even in the Divine Scripture, which may produce diverse opinions, without damaging the faith which we cherish, let us not rush headlong by positive assertion to either the one opinion or the other, lest when a more thorough discussion has shown the opinion which we had adopted to be false, our faith may fall with it, and we be found contending not for the doctrine of the sacred Scriptures but for our own; endeavoring to make our doctrine to be that of the Scriptures, instead of taking the doctrine of the Scriptures to be ours.”

Nor let the friends of Science, on the other hand, demand too early that the current exposition of these disputed passages shall be changed. “When a demonstration,” said Cardinal Bellarmine, giving his opinion on the great Copernican controversy, “when a demonstration shall be found to establish the earth’s motion, it will be proper to interpret the Sacred Scriptures otherwise than they have hitherto been interpreted in those passages where mention is made of the stability of the Earth and the movement of the Heavens.” This opinion is accepted by Mr. Whewell, in his *Philosophy of the Inductive Sciences*,* as a judicious and reasonable maxim for such cases in general. “So long as the supposed scientific discovery,” he says, “is doubtful, the exposition of the mean-

* Vol. ii. p. 148.

ing of Scripture given by commentators of established credit is not wantonly to be disturbed; but when a scientific theory, irreconcilable with this ancient interpretation, is clearly proved, we must give up the interpretation, and seek some new mode of understanding the passage in question by means of which it may be consistent with what we know; for if it be not, our conception of the things so described is no longer consistent with itself."

And if there be any disinclined to entertain these comparisons between Science and Scripture, and bent on retaining the literal import of the Sacred text, to such we would say, in the language of Kepler,* "I beseech my reader that, not unmindful of the divine goodness bestowed on man, he do with me praise and celebrate the wisdom of the Creator, which I open to him from a more inward explication of the form of the world from a searching of causes, from a detection of the errors of vision, and that thus not only in the firmness and stability of the earth may we perceive with gratitude the preservation of all living things in nature as the gift of God, but also in its motion so recondite, so admirable, we may acknowledge the wisdom of the Creator. But whoever is too dull to receive this Science, or too weak to believe the Copernican system, without harm to his piety, him, I say, I advise that, leaving the school of astronomy, and condemning, if so he please, any doctrines of the philosophers, he follow his own path, and desist from this wandering through the universe; and that lifting up his natural eyes, with which alone he can see, he pour himself out from his own heart in worship of God the Creator, being certain that he gives no less worship to God than the astronomer to whom God has given to see more clearly with his inward eyes, and who, from what he has himself discovered, both can and will glorify God."

* Whewell's Bridgewater Treatise, p. 314.

We have thus set forth what seems to be a fair view of an embarrassing and much-debated subject. Reserving many details till we come to confront various branches of Science with Revelation, we have intimated generally our opinion that, framed as the human mind is, it cannot refrain from comparing and attempting to reconcile different systems of truth. The inductions of mere Physical Science are rarely so well established that we do not feel pleasure when we find them sustained by ancient traditionaly beliefs or authentic records. In Geology, the value of such traditionaly and historical evidence has recently been demonstrated by a learned German, Von Hoff;* and Mr. Lyell also deserves praise for the sagacity and candor with which he has applied such evidence to several difficult questions. But if ancient records are to be appealed to in aid of Science, the records indited by Moses are older than the oldest; and if uninspired documents may have great value in this respect, the fact that they are believed to be inspired ought not to impair their weight. And if we may appeal to Scripture to ascertain the value in part of a scientific theory, why not appeal, on the other hand, to well-established Science to ascertain in part the value of a Biblical theory to test the correctness of particular interpretations or the general claims of the whole narrative?

Our confidence in certain readings or interpretations of disputed texts may be firm, and yet we are gratified when some unexpected fact, brought to light by a traveller, historian, or antiquarian, shows that we are right; that witnesses who cannot be impeached thus start up in the dim past, or in distant lands, to corroborate our views. So our faith in the Bible, generally, and in all that it contains, may be deep and unshaken; and yet may we not rejoice when we find that on the venerable monuments of Egypt and the hoary cliffs of Sinai or Horeb, there are testimonials that have come down

* Whewell's Philosophy of the Inductive Sciences—Palæontolgy.

to us unharmed through thousands of years and unnumbered human vicissitudes,—testimonials of which the sacred writers never could have dreamed, but which proclaim in clear and impressive accents that their record is true? We rejoice not because we doubted before,—not even because we believe more cordially now,—but because we find that that which is irrefragable truth to us has been made to appear like truth to others. We rejoice that such an opportunity for vindicating itself has been afforded to the Bible, and that that opportunity has been signally improved. We rejoice that verifications, each independent of the rest, are thus multiplied, since each will address itself with peculiar force to a certain class of minds. We rejoice in the pledge thus given that Science as it advances will have less and less ground of cavil against Revelation, and that in proportion as men of profound knowledge and sagacity explore the relations between the Word and the Works of God, they will see new reason to acknowledge that both alike are bright with traces of a wisdom and a power above this world.

That such will indeed be the case, that Christianity has nothing to fear but much to hope from the progress of Science, and that the alliance between them is like to become closer and closer, we cannot doubt. That philosophy will sometimes lose itself in irreverent conjectures, and sometimes become too highly elated with the consciousness of its own independent powers, may be expected. No studies, even the most sacred, are exempt from these temporary aberrations. But that the Inductive Sciences generally, or those which relate more especially to Physics, will ultimately prove unfriendly to the Christian's faith, is an apprehension, warranted, as it seems to us, neither by the nature of the case nor by the experience of the past. There are those, we know, who look on these studies as tending to foster a sensual tone of thought; as unduly exalting the material element of our existence; as laying the foundation of coldness and distrust in regard to all

that is spiritual, and especially in regard to all that is supernatural. To a fault of this kind, which may be charged upon some of the speculations in our time, I have already had occasion to refer; and I would admit here distinctly the tendency of exclusive devotion to material studies in a narrow spirit, to engender distaste for higher contemplations. But this is the fault of the individual or of the age rather than of Science, and it is likely to be amended by the growth of true knowledge and of a wider culture. As all truth is from God, the proper study and contemplation of it must be calculated to carry the mind towards God. That great Being is best known through his Word, illustrated and enforced by his works and ways; and those works are best understood in proportion as we apply to them the inductive method of philosophizing.

“Though I am willing to grant,” says Boyle, “that some impressions of God’s wisdom are so conspicuous that even a superficial philosopher may thence infer that the Author of such a work must be a wise agent; yet how wise an agent He has in these works expressed himself to be, none but an experimental philosopher can well discern. And ‘tis not by a slight survey, but by a diligent and skilful scrutiny of the works of God, that a man must be, by a rational and effective conviction, engaged to acknowledge that the Author of nature is wonderful in counsel and excellent in working.” The fruit of thousands of years of speculation applied to these subjects, before the time of Bacon, would seem to show that the methods of inquiry then prevailing were defective; and the results which have followed the substitution of his method seem equally conclusive of the fact, that unless knowledge is a bane and ignorance the mother of true devotion, Science must have enlarged our means of adoring and loving God, because it has enlarged our means of knowing Him. It unfolds the order and manifold adaptations to man’s welfare of the material world with such impressive clearness, that a

mind open at all to religious sentiment can hardly fail to be affected.

If in all ages the Heavens have declared the Glory of God, much more emphatically is this the case now that modern astronomy has mapped out the courses of the stars, has unfolded the beautiful simplicity which pervades all their movements, and reduced those movements to one law, which seems to prevail wherever in the universe there is matter. So striking, indeed, are these lessons, that not even those least disposed can quite withstand their influence. When La Place describes the arrangements by which the stability of the solar system is upheld, he cannot help (though he formally repudiates the doctrine of final causes) yielding to that notion of an end or purpose which they seem to force upon the mind. "It seems," says he, "that Nature [suppose the word God substituted for Nature] has ordered everything in the Heavens to insure the duration of the planetary system by views similar to those which she (He) appears to us so admirably to follow upon the earth, for the preservation of animals and the perpetuity of the species. This consideration alone would explain the disposition of the system if it were not the business of the geometer to go further." In like manner Cabanis, a French physiological writer of eminence, who was thoroughly skeptical in respect to final causes, writes in this wise when he speaks of the laws of reproduction of the human race: "I regard," says he, "with the great Bacon, the philosophy of final causes as barren; but I have elsewhere acknowledged that it was very difficult for the most cautious man not to have recourse to them in his explanations." When the truths unfolded by science wring such acknowledgments from unbelief, what must be their legitimate influence on the unbiased?

But there is another respect in which these studies seem to me to be auspicious to the Christian faith. They are favorable to self-control,—for they give to the mind the power of

concentration, while they save it from that vacuity of thought which is the origin of many of the vices of our nature; and they do more.

To borrow the language of one of the first philosophers* of Europe and of our time, "The study of the higher Sciences is well suited to keep down a spirit of arrogance and intellectual pride; for, in disentangling the phenomena of the material world, we encounter things which hourly tell us of the feebleness of our powers, and material combinations so infinitely beyond the reach of any intellectual analysis as to convince us at once of the narrow limitation of our faculties. To an Almighty Being, with the attribute of ubiquity, in whose mind all things past and to come coexist in eternal presence, to Him all truth is by intuition; by us truth is only apprehended through the slow and toilsome process of comparison. So that the powers and capacities forming the very implements of our strength are also the indications of our weakness.

"Simplicity of character, humility and love of truth ought therefore to be (and I believe generally have been) among the attributes of minds well trained in philosophy. After all that has been done since the thoughts of man were first turned to the phenomena of the material world, after all the boasted discoveries of Science, from the first records of civilization down to our own days, those glorious passages of the Old Testament, contrasting the power and wisdom of God in the wonders of his creation with man's impotence and ignorance, have still, and ever will continue to have, not merely a figurative or poetical but a literal application. 'Gird up now thy loins like a man; for I will demand of thee, and answer thou me, Where wast thou when I laid the foundations of the Earth? Declare, if thou hast understanding. Whereupon are the foundations thereof fastened? or who

* Prof. Sedgwick's Discourse on Studies of the University of Cambridge.

laid the corner-stone thereof, when the morning stars sang together and all the sons of God shouted for joy? or who shut up the sea with doors, when it brake forth as if it had issued out of a womb? When I made the cloud the garment thereof, and thick darkness a swaddling-band for it, and said, Hitherto shalt thou come, but no further: and here shall thy proud waves be stayed? Where is the way where light dwelleth? and as for darkness, where is the place thereof? Knowest thou it, because thou wast then born? or because the number of thy days is great?"

"Before such an interrogation we can only bow in humble admiration. The study of the laws of nature may strengthen and exalt the intellectual powers; but strange must be our condition of self-government, and tortuous our habits of thought, if such studies be allowed to coexist with self-love and arrogance and intellectual pride."

Is it said that if these are the appropriate results of scientific studies, they are results not usually attained; that arrogance, uncharitableness, and contempt of things sacred have often characterized the votaries of these sciences? I answer that these vices are not peculiar to minds addicted to the physical sciences. Neither metaphysicians nor moral philosophers nor historians nor even theologians are always meek, charitable, or reverent. The temper with which a man applies himself to a study will depend more on the prevailing habits of his mind than on the study itself. If he carry to it a proud, unhallowed, or licentious spirit, proud, unhallowed, or licentious will be the tone in which he will discuss problems and announce results.

The true question before us respects the influence which the physical sciences are calculated to exercise upon an incorrupted mind,—on one not bent on evil and willing to be made truly wise and good; and on this point let all history answer. For every Natural philosopher eminent as a skeptic, not less than five, I think, might be produced equally eminent in that

capacity who were not Natural philosophers, but metaphysicians, poets, scholars, or men of the world. France is often appealed to as illustrating the baneful effects of a too earnest application to physical studies; but whence came the Infidelity of France? Was it from the labors of Descartes or Pascal,—almost the only eminent natural philosophers she had before the time of the Regency,—men who were as eminent for their piety as their science? Her deep moral degeneracy, induced chiefly by social and political causes, and by a false system of metaphysical philosophy, was the true parent of her irreligion and unbelief. Bayle, Condillac, Diderot, Voltaire, Rousseau were not trained in the severe school of physical science more than Hume, or Bolingbroke, or Shaftesbury, or Lord Herbert. When infidelity was once established and had become well-nigh universal, it is not strange that her great mathematicians and mechanical philosophers* should have shared in the prevailing infection. They did not imbibe the poison from their studies more than the sick man owes his disease to the food he takes; but that disease had power to transform even healthy aliment into an aggravation of its own virulence.

Against the brief list of naturalists and mechanical philosophers who have adopted a cheerless unbelief, it would be instructive to draw out, if we had time, the long list of those who have coupled devotion to science with an humble and earnest faith in religion. It would be found, as Boyle says, "in almost all ages and countries the generality of philosophers and contemplative men were persuaded of the existence of a Deity from the consideration of the phenomena of the universe, whose fabric and conduct they rationally concluded could not justly be ascribed either to chance or to any other

* It ought to be considered, too, that D'Alembert, La Place, La Grange, etc. were employed not in the *inductive work of discovery*, but in simply *deducing* from the Law of Gravitation some of its results. Mr. Whewell has shown in his Bridgewater Treatise (Book iii. chap. 5, 6) how much less favorable this latter process is to high moral and religious contemplations.

cause than a Divine Being." We should see reason to conclude that the judgment recorded by Newton in regard to the legitimate tendency of all Inductive Physical Science, is the judgment of truth and soberness. "The business of Natural Philosophy," he says, in one of the Queries attached to his Optics, "is to argue from phenomena, without feigning hypotheses, and to deduce causes from effects till we come to the very First Cause, which is certainly not mechanical." "Though every true step made in this philosophy bring us not immediately to the knowledge of the First Cause, yet it brings us nearer to it, and is on that account to be highly valued." And in the Note or Scholium, with which he concludes his great work, the "Principia," is this impressive testimony: "This beautiful system of Sun, Planets, and Comets could have its origin in no other way than by the purpose and command of an intelligent and powerful Being. He governs all things not as the soul of the world, but as the Lord of the Universe. He is not only God, but Lord or Governor. We know Him only by his properties and attributes,—by the wise and admirable structure of things around us, and by their final cause. We admire Him on account of his perfections. We venerate and worship Him on account of his Government."

PART II.

NATURE A WITNESS.

I. INORGANIC NATURE. II. ORGANIC NATURE.

BOOK I.

INORGANIC NATURE.

PHYSICS AND CHEMISTRY.

CHAPTER I.

MECHANICAL PHILOSOPHY A RELIGIOUS TEACHER.

OUR object in this chapter is to point out how Mechanical Philosophy may be made subservient to Religious instruction and improvement; and we shall endeavor to do it by showing that the mechanical constitution of Nature is everywhere crowded with marks of creative foresight, and with contrivances calculated to promote man's highest welfare, not only as a physical but also as an intellectual and moral being.

When surveyed through the medium of this Science, which may be considered as one of the great optic tubes, by the help of which we inspect the operations of Nature, the world presents to an observer two leading facts,—*Motion and Rest*. Both are needed, in order to the well-being of man and other terrestrial inhabitants, and it is most interesting to remark, that where each is needed each seems to have been provided for. Of objects on the earth's surface, some—like plants, edifices, rocks—need to be stationary. Others, like the materials on which we operate in the useful and liberal arts, need to be movable; but with a balance of inclination towards rest. Others again, such as clouds, air, the water of streams and rivers, and of the ocean, contribute most to the welfare of living creatures when in motion, and, accordingly, motion,

restless and unceasing, is one of their striking characteristics. This general correspondence between the mechanical state of bodies and the innumerable various ends which they subserve, can hardly fail to impress with admiration the most casual observer.

This admiration, however, will be heightened when we consider the *means* by which a result so wonderful has been attained. Whatever the state of bodies, whether it be rest or motion, that state is always the effect of *forces* which act upon those bodies. No body exists in nature which is not urged by one or more of these forces. For example: gravitation is a force which presses upon every mass and every particle of matter, whether that matter be at rest or in motion; whether it lie within the earth's sphere of attraction or at an immeasurable distance beyond it. But, if pressed upon by one force, a body can remain at rest only when the action of that force is neutralized or counteracted by one or more opposing forces. Thus, the weight or force of gravitation in our own body would carry it rapidly towards the centre of the earth were it not for the floor beneath us, which presents a countervailing force or resistance more than equal to the former. So a cloud, which hangs poised and motionless above us, is in *equilibrio*,—between the force of gravity in the cloud and superincumbent air on the one hand, and the elastic force of the air beneath it on the other. In like manner, a boy's kite is at rest in the air when the force of traction, exerted by him through the string, is equivalent to the other two forces which act upon it, viz., the force of the wind, urging it forward and upward, and the force of gravitation, which would bring it downward. Here, then, we have, in one case, three forces; in the other, two, acting simultaneously upon the same mass of matter and *destroying all motion*; or, in other words, we have these forces neutralizing each other, so that it is usual to consider Mechanics, or the Science of Forces, under two heads:—1st. *Statics*, i.e. *the Science of Forces destroying motion*. 2d. *Dy-*

namics, i.e. the *Science of Forces producing motion*. It ought to be observed here, that when we speak of bodies as being in a state of rest, we mean not absolute, but merely relative, rest. It may be doubted whether there is such a thing as absolute rest in the universe. The Sun, round which all the planets and comets of our system are making their constant circuit, is supposed, and not without good reason, to be itself advancing about some far-distant centre; and everything leads to the conclusion that what are called fixed stars are, in like manner, restless voyagers on the great ocean of space. We usually consider terrestrial bodies as at rest, however, when they continue in the same position *with respect to fixed lines on the earth's surface*; and it is in this sense that we invariably employ the term in this chapter.

We need hardly add, that most objects on or near the surface of our planet, are neither permanently at rest nor permanently in motion. A boy's sport would soon end if that exact equilibrium between the three forces that act upon his kite, which we have noticed, were always maintained so soon as that kite reaches a certain elevation. Clouds are a pleasant object of contemplation when they hang motionless on the mountain or green hillside; but they best perform their offices when they are floating to and fro; and in their case, as in that of the kite, but a slight addition to one of the forces is needed in order to disturb the temporary and unstable equilibrium, and substitute motion more or less violent for rest. It is thus throughout nature. The very same powers which at one time anchor a body, as if in immovable repose, at another impel it forward. And even if we take bodies which never move, or those which never rest, we shall find that both are under the dominion of the same forces, and that it is through the adjustment, as to intensity and direction, of a few simple ones that the mechanical state of all masses of matter is regulated by the Creator, whether it be one of permanent rest, permanent motion, or frequent interchange and alteration.

Which, then, are these forces? and in what way does each contribute, both separately and in conjunction with others, to set forth the Divine wisdom and goodness by contributing to the welfare of his sensitive creatures? We shall notice:—1. *Inertia*. 2. *Friction*. 3. *Gravity*. 4. *Heat*. 5. *Animal Power*.

1. INERTIA.—This is a principle or property of matter which never directly originates motion, but which still exerts so much influence—at one time in preventing, at another in maintaining and modifying it—that it may well be considered as a force. Its name indicates its character but in part. It is *the conservative principle in the material world*. It always contends for the *status in quo*, whether that state be one of rest or of motion. If a mass be at rest, it withstands all efforts to move it,—not more decidedly, however, than it would withstand, if the same body were in motion, any effort to stop it. It is strictly conservative, its opposition being simply to change of any kind,—not to progress, if progress be the pre-established order of things. If a body be in motion, it always tends, in virtue of inertia, to continue in that state; and just in proportion as obstacles—*i.e.* retarding forces—are withdrawn, the motion is prolonged, as we can all see in the case of balls rolling over smooth surfaces, or of tops spinning on hard and polished floors. Hence, if *all* external resistance were withdrawn, moving bodies would continue in motion forever, as at first view seems to be the actual condition of the planets in their revolutions round the Sun. It is not, however, absolutely certain that the planetary spaces are free from all resistance to bodies passing through them. Observations on Encke's comet have indicated a very slight retardation in its motion, such as would ensue on the passage of a light body like that comet through an exceedingly thin resisting medium. If such a medium does exist, it must occasion, unless fresh projectile impulses be given to them, a corresponding retardation in the annual motions of the planets; and thus this recently-discovered fact points us forward to a day when each of these planets, their orbits being

gradually contracted, may, in its turn, by the action of natural forces, be precipitated into the Sun, and end its circuit in one final conflagration. This medium may serve, at the same time, to lead our minds back to a great fact in the physical history of the past. It would show that these planets cannot have been moving through their orbits, as some contend, through all a past eternity ; for on that supposition this resistance would have arrested their course ages on ages before the present time. In this way Mechanical Philosophy may supply evidence additional to that supplied by Geology in confirmation of the fact that the duration of the present system of the universe is limited, while it corroborates those passages in Revelation which refer us to periods in the distant past "before the mountains were brought forth, or ever the earth and the world was formed," as well as those which foreshadow a great catastrophe, in which "the elements shall melt with fervent heat, and the earth and all that is therein shall be burnt up."

What are the uses of this great conservative power in nature called Inertia? or, in other words, how does it serve to set forth the natural and moral perfections of the great Lawgiver by whom it was first established and is still maintained? Some of these uses are alike obvious and important. Inertia renders matter passive in all its states, and thereby enables us, when we know the forces that act upon it, to calculate beforehand its position or motions, and to represent with mathematical accuracy the effect of any change in those forces. It thus subjects matter, in many respects, to man's control, and presents a constant challenge both to study and to action. It enables us also to anticipate and accommodate ourselves to changes which may be occasioned by natural causes beyond our control. And it also provides that great changes, whether from rest to motion, from motion to rest, or from one rate of motion to another, shall not take place instantaneously, but shall be effected more gradually, and

therefore more safely and conveniently. It also exhibits to us, by means of contrast, the peculiar activity of our own spiritual natures, which, unlike matter, are capable of originating motion and other changes, and also of resisting outward influences. So dumb nature is by means of this Law made to warn us against a mere vassalage to influences from without, and to animate us to a worthy exercise of all our faculties.

Another result of this law deserves remark as indicative of creative and benevolent foresight. It is to be observed in the opposite effects of this same inertia as it operates on the earth and in the heavens. In the heavens it secures what for all practical purposes may be styled *perpetual motion*. On the earth it produces in most bodies a tendency to perpetual rest. Solid bodies moving through the air experience constant resistance from its inertia, and where no new impulse is given they soon come to rest. Owing to this resistance, and to another cause which we shall notice presently, perpetual motion, self-maintained, is not possible on the surface of our globe. Man is thus called upon to interpose, from time to time, to recruit the wasting energies of any force he may employ, and to maintain constant vigilance over his own works and also over those of nature. Both furnish occasion for exercising his industry, foresight, and self-control,—qualities which if not positively moral are yet indispensable in order to all moral culture and all high spiritual excellence. He at the same time secures through inertia the advantage of having the various movable objects which he uses (such as tools and materials) stationary,—where he leaves them he finds them. The slight impulses which they receive from him, or from other sources, soon spend themselves, and they are at rest. Otherwise a touch given accidentally might impart perpetual motion to objects which we want always near us, but which we cannot always be thinking of.

With a glance at one other result of this law of inertia we

leave it. Bodies in motion always tend, in virtue of this law, to maintain their courses *in right lines*. If they follow any other line, it must be in consequence of some constant force or pressure which, at every instant, deflects them more or less from a rectilinear course, causing them to describe a curvilinear path. If this deflecting force acted alone, it would draw the body towards the point or centre at which that force acts. We see, then, how a single impulse from a projectile force, acting in conjunction with a constant attraction towards any centre of motion, will cause the moving body to revolve in an orbit about that centre, and also how, if there be no resistance, such revolution would maintain itself forever. The resistance presented to the motion of the planets is so slight that it has made as yet no perceptible alteration in the length of our years, and in practice as well as in ordinary reasoning may be overlooked. We see, then, how the globe that we inhabit, and all the other primaries of the solar system, need to have been merely projected into space, with a certain force passing through any point within their surface, save the centre, and the result of this projection, combined with the attractive force of the Sun, would be a twofold motion,—one of rotation on its own axis, another of revolution round the Sun,—neither of which would ever terminate of itself, so that the system would carry within it, subject to certain conditions, an essential principle of stability,—a guarantee for the permanence and regularity of its motions.

2. FRICTION.—We have thus far spoken of a force which tends to maintain stability, to uphold the existing order of things everywhere in nature, but which near the earth, *i.e.* within the limits of its atmosphere, favors rest rather than motion. There is another force, still more useful in this latter respect, and that is *friction*, or the resistance which two surfaces in contact always present to any motion of one of these surfaces over or against the other. This resistance increases in the precise ratio of the pressure with which they act upon each

other. Suppose a man standing on the smoothest ice, the soles of his boots or shoes being equally smooth, we know with what difficulty he maintains his position. The slightest wind would cause him to slide, the slightest inclination of his body, from one side to the other, would be followed by a fall. Yet in this case there is still some friction between the two surfaces. Were it absolutely destroyed, there is no reason to believe that, even with the utmost strength and address, he could hold his place for an instant. Suppose, then, the same entire absence of friction in the case of the blocks of stone or bricks which compose the masonry of a building. Suppose there were no friction between the superstructure of a building and the foundation on which it rests,—between bolts, spikes, pins, and nails, on the one hand, and the parts which they are intended to bind together,—between the articles of furniture in a room and the floor on which they stand,—between the pen we hold in our hand and the hand itself,—between the masses of earth on a hill or mountain-side and the inclined surface on which they rest,—between our feet and any floor or street, not perfectly horizontal, on which we happen to walk or stand. The results which must ensue are evident. The soil on every hillside would rush to the valley below. Our pens, in spite of the closest grasp, would turn continually in our hands, the parts of a building or of furniture could not be held together, utensils and tools would maintain an almost incessant dance, and our position, when on chairs or in bed, would be like that of a suspended kite or cloud. A current of air, created by the opening and shutting of doors, would be sufficient to send us whirling across the floor.

3. GRAVITY.—Yet another force is necessary, however, in order to secure enough of rest and stability to objects on the earth's surface. The earth revolves on its axis, as we all know, and its velocity is such that the building in which we write passes through more than seven hundred miles in an

hour, or a little over thirteen miles in each successive minute. The line described by every object is the arc of a circle, and from this arc the body is constantly endeavoring to recede in virtue of what is called *the centrifugal force*, which is only another name for the inertia which would always carry bodies when in motion in right lines. The effect of this inertia, or centrifugal tendency, if not counteracted, would be that all movable bodies on the globe, such as air, water, animals, men, edifices, everything, in short, not held to it by the strongest attachments, would be hurled off into the surrounding space, just as we see the water and mud fly from the wheels of a carriage in rapid motion. What is the power, which the All-wise and Benignant Author of the Universe has provided, to countervail this dangerous tendency? What is the attractive force which tends to attach each object on the earth's surface to its assigned place, and to resist all the forces that would drive it away? We need hardly say that gravitation is that power. In conjunction with friction, it anchors edifices to their foundation in the earth, it confines the ocean to its bed, rivers to their channels, animals to their places of rest when asleep. It prevents the air from being dissipated, and thus keeps the earth enveloped in that transparent robe of atmosphere and vapor which is one of the great means of maintaining life and promoting the growth and enjoyment of all animated nature. It counteracts the effect of impulses which would otherwise carry bodies away to an indefinite distance from the earth, and causes these bodies, whatever the force by which they are projected, to return speedily to its surface. It seems to watch, as if with sleepless vigilance, over all terrestrial objects, keeps them in subjection to the parent earth, and thus provides that the mass of matter in this, as in every other planet, shall be a constant quantity, thereby maintaining unchanged the relations between those planets and between the several parts in each.

But gravity causes motion as well as rest. All matter

gravitates towards all other matter. Hence, though the earth confines all terrestrial objects near to its own surface, because, being the nearest great mass of matter, its attractive power transcends that of all other bodies in the solar system, still, it is true that each particle of matter on our globe really gravitates towards, or is attracted by, each one of those distant bodies. A visible effect of this attraction may be witnessed daily in the rising of the tide. In this case we see water gravitating *away* from the earth, while, on the other hand,—in rain falling to the ground, in streams making their way from higher to lower levels, and serving, as they fall over precipices, to move machinery,—we see water gravitating *towards* the earth. If we would appreciate the innumerable benefits thus bestowed on man by gravity as a moving agent, consider the mechanical power that is furnished ready to our hands by the numberless streams that flow towards the ocean from both sides of the mountain chains which stretch from one extremity of a continent to another,—a power sufficient to manufacture all the raw productions of our fields and mines, and at the same time to transport them to tidewater. How considerate the Wisdom and Kindness which have thus provided forces where they are most needed for the service of man, and how impressive the great law which has ordained that we shall enjoy their aid only when we exercise intelligence, self-denial, and a provident industry!

It is worthy of remark, also, that the motions resulting from gravity will be essentially varied by the natures of the bodies through which it acts, according as their constituent particles are held together by cohesion, as in solids, or are disconnected though in contact, as in liquids, or are mutually repellent of each other, as in the atmosphere and other aeriform bodies. The result of this difference, in the constitution of gravitating bodies, is that the same body will ascend in water, which would have descended in a vacuum, and remained stationary, perhaps, in the air. Water itself, which can only run down

an open channel by the action of gravity, is made to rise by means of the very same force in the barrel of a pump or in the arm of a bent tube. Gravity will, also, enable any quantity of water, however small, if properly disposed, to raise any weight, however great, as is seen in the Hydrostatic press or bellows. In like manner, gravity will impart to a few gallons of water confined in the crevice of a canal-bank or the fissure of a rock an explosive power, like that of gunpowder, and will occasion, in some cases, disruptions and mountain-slides, which are so frequently observed and so imperfectly accounted for. Could it have been less than Infinite Wisdom which thus multiplied and varied the operations of the same agent, and adapted them to the production of such multifarious effects?

4. HEAT.—We have now seen some of the useful results of *Gravity, Friction, and Inertia*. Their combined action would, in time, bring all inanimate bodies on the earth's surface to a state of rest; and, were it not for the influence of a counter-acting principle, they would induce universal stagnation and sterility. Water, on the summits of mountains, would soon discharge itself, by the action of gravity, into the lakes and streams below, and these again would flow into the ocean. Thus all means of irrigating the soil would be withdrawn, and vegetation of every kind would languish and die. We need, then, a vivifying power which will break up this deep stagnation, which, in the spirit of a Reformer, will withstand the excessive conservatism of the principles we have already noticed, and maintain a healthy system of vicissitude and compensation. Such a power we have. It is *heat*,—the great agitator,—the all-powerful *regenerator in nature*. Let us see how it operates, more especially as a mechanical agent; or, in other words, how it manifests the foresight of the Creator in regard to the welfare and enjoyment of living beings.

And 1st. Heat expands water, and hence the *warm currents* which are created by the excessive heat of the tropics acting upon the water beneath. The Gulf Stream, which issues out

of the Gulf of Mexico and runs northeasterly along the coast of America, may be an example. It carries with it the heat of its native latitude, and thus serves to mitigate the severity of a northern winter, while a corresponding current on the coast of Africa, bearing south, brings down the cold of a northern region, and in this way allays the intensity of equatorial heat. A like advantage is attained through the same law in another way. As water becomes cooled on its surface at night or in winter, such superficial portion contracts, becomes heavier, and sinks towards the bottom, while warmer portions rise to the surface, diffusing around their milder influence. On the other hand, in the daytime and in summer, the heat which falls upon the transparent water of the ocean being imbibed much more slowly than that which falls on land, the land becomes warmer than the sea,—whence those grateful breezes which blow at such times from the sea to temper the fervid heat of the adjacent shores. In this way the alternations of heat and cold in every locality become much less violent than they would be otherwise, and the inequalities of temperature in different latitudes, as we shall see hereafter, are redressed by like means.

2d. Another effect of the expansive power of heat is well deserving of our attention. We have seen in a former chapter* how the regular rate of *expansion and contraction* in bodies acted upon by heat is *interrupted in the single case of water*, as if with the express intention of avoiding the evils which must ensue if ice were specifically heavier than water. One effect of this exception is, that when we cannot convert ice into water or thaw it, the volume is diminished, although the temperature is increased. Yet another fact, however, and one still more remarkable, characterizes this change as well as the corresponding one of the conversion of water into vapor or steam. In each case, that of thawing ice and that of evaporating wa-

* Part i. chap. iii. sec. ii.

ter, the sensible heat increases regularly to the point at which liquefaction or vaporization takes place, and then it remains for awhile stationary, even though new supplies of heat be added. In other words, we cannot raise the temperature of a thawing mass of ice till the whole be thawed, nor of boiling water till it is all converted into steam. All the heat that we apply while these changes are going on is absorbed or becomes latent in producing them. How important this property! Like inertia, in respect to the motion of masses, this peculiarity of latent heat secures that the change from ice to water and from water to steam shall be gradual. If it were otherwise, both thaw and evaporation must be instantaneous, and prove as destructive as they are now safe and useful. At the first touch of warmth all the snow which lies on the roofs of our houses would descend like a water-spout into the streets; all that which rests on the ground would rush like an inundation into the water-courses; the snow-built hut of the Esquimaux would vanish like a house in a pantomime; the icy floor of the river would be gone without giving any warning to the skater or traveller; and when, in heating our water, we reach the boiling-point, the whole fluid would "flash into steam," to use the expression of engineers, and dissipate itself in the atmosphere, or settle in dew on the neighboring objects. It is obviously necessary for the purposes of human life that these changes should be of a more gradual and manageable kind than such as we have now described. Yet this gradual progress of freezing and thawing, of evaporation and condensation, is produced, so far as we can discover, by a particular contrivance introduced as an exception to a general law and expressly for this one purpose. Like the freezing of water from the top or the floating of ice, the moderating of the rate of these changes seems to be the result of a violation of a law which, from its simplicity, would seem to be the most natural law for all cases. At certain critical points it is modified, and modified precisely in that way which produces

these important benefits—may we not add?—in order to produce them.*

The effect of heat in the formation and distribution of vapor is also well worthy of notice. Water evaporates at all temperatures, even when frozen; so that what we call the air, or atmosphere, is always composed of two elastic and invisible substances—is, in fact, two atmospheres, one of aqueous vapor, the other of common air,—the former being to the latter in the ratio say of 1:60; *i.e.* the proportion of aqueous vapor to that of common air in the atmosphere is on an average about one part in sixty. Whenever the vapor, at any place, falls below the temperature at which it was formed, it returns to the state of water, or is condensed, and, if it be sufficiently cold, also freezes. In either case clouds are formed, the particles of which, whether liquid or frozen, may be so small that they float in the atmosphere. When these particles are aggregated so as to form drops of rain or snowflakes, they descend; and as clouds are attracted round the brow of mountains, it follows that larger quantities of rain and snow will fall there than on low lands. Thus, by means of heat water is transformed into vapor, lifted above the earth, suspended over its surface, and transported from places where it was superfluous to other places where it is needed. It is then restored by condensation to its original state, and brought back as dew, rain, hail, or snow to the ground, through which

* Whewell's Bridgewater Treatise.

NOTE.—The actual amount of vapor in the atmosphere at any one time is probably never as much as half the greatest amount which it could hold in solution,—*i.e.* a quantity equal if condensed into rain to, say four and a half inches over the whole surface of the globe. But thirty inches of rain on an average falls every year, so that the vapor must have fallen and been re-evaporated fifteen times in the course of a year, and this is exclusive of dew, which is evaporated and condensed much oftener, and which, by a law of equal simplicity and beneficence, bestows its favors where it is most needed,—on the grass-plot and cornfield,—not on the rock, the naked sand, or the trodden highway. So rain does not fall on the arid desert, but on the forest.

it percolates by gravitation, watering plants as it goes, and finally flowing into the ocean or returning back directly to the air by evaporation. Mr. Dalton has calculated that, in England, thirteen out of thirty-six parts (*i.e.* about one-third) of all the rain that falls on the earth have been drawn by evaporation from the ocean, and the same proportion will, of course, be delivered back to the ocean, through the rivers and creeks which are its tributaries.

The benefits of this ceaseless round which is taken by water under the guidance and government of heat are manifold, and not less manifold than the testimonies which they yield to the beneficent and provident care of our Heavenly Father. 1st. The vapor distributed throughout the atmosphere comes in contact with the leaves of plants, and thus supplies a nutriment which is indispensable to their growth; and in hot and dry weather, when most needed, this supply of vapor is most abundant, because the process of evaporation is then most rapid. 2d. The condensation of this vapor into clouds is fraught with blessing. In summer, these clouds act as an awning or pavilion, excluding the scorching beams of the sun, and thus promoting not merely the comfort of animals, but the growth also of vegetables,—it being found by Duhamel that they gain more in a week of cloudy weather than in a month of hot or dry. In winter, these same clouds become a warm mantle, arresting the escape of heat from the ground,—a process which goes on most rapidly under a cloudless sky, as is apparent from the fact, so well known to all, that the clearest nights are also the coldest. Snow, and even ice, answer the same purpose still more effectually, inasmuch as being bad conductors of heat, and being near the ground, they help to maintain the higher temperature which the earth has, as compared with the atmosphere; and they thus favor the vital action going on at the root of plants, while the water in the ground, by freezing and expanding, loosens and pulverizes the soil, and at the same time serves as the first nourish-

ment of the plant in early spring. 3d. The use of rain and dew we need not dwell upon. It is sufficient to observe, that the greater proportionable quantity which falls on elevated regions is needed in order to irrigate the soil below, and that this water, as it rolls down, wears off and bears along with it the substance of rock and earth, thereby contributing to replenish exhausted land and to enrich the country through which it flows; while it supplies, at the same time, a moving-power for machinery, and means, often, of inland navigation.

The uses of winds are quite too numerous to be recounted here. One is well entitled to consideration. The ancients supposed that the equatorial regions of the earth were uninhabitable, on account of their intense heat. Pliny, following Aristotle, says: "The central regions of the earth, where the sun runs his course, are burnt up with fire. The temperate zones which lie on either side can have no communication with each other in consequence of the fervent heat of this region." This opinion prevailed down through the Middle Ages, and was never fully disproved until the time of Columbus. The evil which thus haunted the imaginations of men for centuries, has been guarded against by the constitution of the atmosphere and by the nature of heat. Currents of air or winds are the benignant agents that fly with swift wings through space, carrying away from the equatorial parts of our globe much of their heat to assuage the fierceness of a polar sky and temper the severity of winter everywhere, while counter-currents flow in, loaded with cold, to breathe vigor into the languid frames of those who dwell beneath a torrid sun.

There are several other forces besides heat and gravity which exert great influence on the mechanical changes that are going on, unceasingly, over the globe, as well as on the equilibrium of bodies. Omitting, for the present, such as act at insensible distances, and belong on that account to chemistry, we merely mention *Electricity, Magnetism, and capillary attraction*

as powers constantly at work, and producing vast and most beneficial results. In considering the manner in which they illustrate the Divine character, one fact, which results from a comparison between them, is striking and significant. It is well known that the intensity of the force of gravitation diminishes in the inverse ratio of the square of the distance between the gravitating bodies. In other words, if the force of gravity at the distance of ten feet from the centre of the earth be represented by four, at the distance of twenty feet it would be represented by only one; the distance being increased by two, the gravitation will be diminished by the square of two—*i.e.* four. The point to which we wish to call attention is the perfect analogy which, in this respect, subsists between all the great forces in nature. Not only gravitation, but also heat, electricity, magnetism, and capillary attraction seem to obey the same laws, their intensities always varying inversely as the squares of the distance. Whenever in works of art we meet, at every turn, the same principle or feature recurring in objects constructed in different ways and for different purposes, we do not doubt that this principle had one source, and that nothing but an intelligent unity of design can account for it. In like manner, we point to the fact that the same law or principle characterizes the action of forces apparently so different, as proving that they had one intelligent Author, and that they may be, in truth, but different phases or manifestations of one power in nature.

“The more,” says Sir H. Davy,* “the phenomena of the universe are studied, the more distinct their connection appears, the more simple their causes, the more magnificent their design, and the more wonderful the wisdom and power of their Author.”

5. Thus far we have noticed none but *inanimate forces*, and the manner in which they conspire to produce both rest

* Elements of Chemical Philosophy.

and motion among terrestrial bodies. There is one other force which may be characterized as a *living force*: it is the power exerted by men, by animals, and even by vegetables, in counteracting and modifying the effect of material forces, and which is considered here in its mechanical aspect only. Left to themselves, those forces would maintain a certain course often beneficial, yet more frequently, perhaps, destructive to living and sensitive beings. Gravitation, for instance, not counteracted, would fix every animal to the spot on which that animal is born. In moving to obtain food and satisfy other wants, he has to overcome this force. Hence all animals are furnished with a power which may be regarded for the present as mechanical, and which, coupled with more or less intelligence, enables them to react upon the outer world and master or withstand the forces which would injure them, and even to change those forces into friends and auxiliaries. This power of acting, as well as of being acted upon, is peculiar to *living bodies*, and, as manifested in man especially, tends greatly to modify the character and succession of mechanical phenomena. The inanimate forces in nature man cannot annihilate, but he can, in some instances, overcome them by means of his muscular strength, as, for example, in walking he overcomes the power of gravity, inertia, and friction. In other cases, he evades the direct action of a material force, as when he employs an inclined plane to reduce the gravitating force of a body within such limits that he can support or raise it. In other instances, again, he transforms these natural powers from antagonists into helpers or servants, as when he uses the weight of water falling down a cataract to move machinery, or to raise him, without effort of his own, from the foot of that cataract to its summit.

6. But *man is himself a machine*, planned and put together with marvellous skill. Within this microcosm of ours, considered merely as matter, what an assemblage of levers, pulleys, cords, joints, braces, tie-beams, pillars, arches, walls, roof!

Many of the bones in the human body are levers, precisely adapted in length, rigidity, and velocity of motion to their several uses. These levers are moved by muscles, instead of cordage, and they turn on joints which, according to the motions required, are hinge joints, ball-and-socket joints, toggle joints, or mortise and tenon joints. The surfaces of these joints are kept lubricated by a fluid which, like oil in common machinery, serves to diminish friction. When velocity is wanted at the expense of force, it is obtained; so where force is to be gained at the expense of velocity. The bones of the leg are made hollow, to save weight and material, without lessening strength; they are strengthened, when strength is most needed, by ridges, like the braces in carpentry; they are adapted to their place and purpose more accurately, according to Sir C. Bell, than the most perfect pillar or king-post.* Does man stand? He is an edifice, needing stability; and arches are provided in his feet, formed on principles, says the same high authority, "more correct than the foundation of that perfection of human architecture, the Eddystone lighthouse." On these arches rest columns to support the superior parts of the structure; and over all is the dome, or head, composed of arches joined in a manner the most exact, and secured against spreading by abutments and tie-beams. But this building is intended for motion as well as rest. It cannot be fastened as a statue is to the pedestal on which it stands, and without which fastening the statue could not remain erect for an instant. Hence there is an internal mechanism of muscles and nerves, through the latter of which the living man receives instant notice of the slightest deviation in his posture from the perpendicular, while through the former this deviation is as instantly corrected.

Does man move? He has organs perfectly adapted to that purpose; and on the instant, all framed and established as he

* *Animal Mechanics* of Sir Charles Bell.

is, the edifice becomes locomotive. The foot which, with its arches, lately supported him, is at once transformed into an instrument of motion. The same column, which lately stood firmly on it, is now swung forward as a lever, in order to find a new place for the foundation of the house. The muscles, which were lately employed only in redressing disturbances in the place of the centre of gravity, have now new employment superadded, and in different parts of the body five hundred of these cords—being twice the number of the lines in a ship of the largest class—are hanging ready to aid in moving, trimming, or guiding the noble vessel,—a vessel which sprang into existence at first in all its matchless perfection, while vessels of human workmanship have been thousands of years in reaching an excellence immeasurably inferior.

Look again at the *involuntary* mechanical functions. Does man breathe? One hundred muscles have to be employed in every respiration, whether sleeping or waking. Does his heart beat? It is a powerful engine, making sixty-six strokes in a minute, and driving fluid along a system of pipes which have been laid down through every limb and every fibre of the system; and all along these pipes there is a contractile power by which the propulsion from the heart is aided and the blood is carried forward in one continuous flow. Does the stomach receive food? Instantly the muscles of that organ and the biliary and pancreatic ducts are excited to action. The food, transmuted into chyle and mixed with the bile and pancreatic juices, passes onward; and then, to strain it off into the blood, myriads of capillary tubes—*i.e.* pipes as small as hairs—open their orifices into the cavity of every part of the intestines. These tubes, which are so fine and slender as not to be visible except when distended with chyle, soon unite into larger branches. The pipes formed of this union terminate in glands, from which other pipes of a still larger diameter arising, carry the chyle from all parts into a common reservoir or receptacle; and thence, again, a main pipe climbs

up the back part of the chest and creeps along the gullet, and there discharges itself into a large vein, that, mixing with the old blood, it may enter the heart and be carried thence to the lungs. To borrow the words of another, "The heart does the office both of a sucking- and a forcing-pump ; and after having drawn the blood towards it, and forced it into the lungs, where it is aerated, receives it again and sends it as arterial blood to the extremities of the body."*

But how inadequate all such sketches of the mechanism of the human frame ! Every part of that frame—the hand, the foot, the eye, the ear, the neck, the tongue, the teeth—would by itself afford themes for a volume. All that we can do is to refer to such Works as have expounded portions of the subject,—such as those of Paley, Bell in his *Animal Mechanics*, and also in his *Treatise on the Hand*, and his *Notes and Dissertations on Paley*, Roget and Kirby in their *Bridgewater Treatises*, and among the ancients, Aristotle and Galen. The few facts which we have just mentioned, can we consider them deeply ? Can we remember the number and variety of the functions which are performed through the mechanism of the body, or compare these with the few simple motions performed by the most perfect specimens of human mechanism (such as Maclzel's automata) ? Can we observe, above all, the complexity of the apparatus on which life depends, the innumerable derangements it is liable to, the ease, safety, and regularity with which each part performs its allotted office, and yet not feel that boundless wisdom and power can alone account for the origin and preservation of such a system ? Galen was converted by his dissections, and " could not but own," says Addison, a " Supreme Being upon a survey of this his handiwork." But ages before dissections were tolerated,—long ere Aristotle and Hippocrates had opened a path into this world of wonders,—when Cimmerian darkness

* Paley.

rested over Anatomy and Physiology, the internal structure of man's frame seems to have been revealed to the sweet singer of Israel and the holy man of Uz. Who guided their pens when they wrote of a structure "fearfully and wonderfully made; of parts curiously wrought; clothed with skin and flesh, and fenced with bones and sinews,"—tracing its gradual growth from "the imperfect substance in the womb to the members which, in continuance, are fashioned when as yet there was none of them," until at length this structure, in all its symmetry and perfection, stands forth? What but the inspiration of the Almighty could have enabled them to project their minds hundreds or thousands of years in advance of science, and employ language which is only growing more and more significant with every discovery in Physiology? We do not, of course, mean literally significant; but simply that, as the language of poetry, it seems to become more and more expressive and felicitous in proportion as we become more thoroughly acquainted with the mysteries of our corporeal nature.

Remember, however, that man is but one of an almost illimitable variety of animal frames.* The Entomologist reckons up some three hundred thousand different species of insects; the Herpetologist not less than fifteen hundred known species of reptiles; the Ichthyologist about eight thousand species of fishes; the Ornithologist about six thousand of birds, and the Zoologist one thousand of Mammalia, twenty-five hundred of Zoophytes, and eight thousand of Mollusca. Yet in each case the mechanism is so modified as to suit, with

* One of the ablest living Naturalists (Lyell) comes to the conclusion that, if we include plants and exclude microscopic beings, we shall have a grand total of between one and two millions of species now inhabiting the terraqueous globe. Were we to add to these the extinct species as yet most imperfectly known but doubtless transcending the existing* species many times told, we should have a variety of organized structures that might appall the boldest spectator.

* See Owen on Br. Reptiles and Mammalia, in Rep. of Br. Assoc.

faultless precision, the wants and habits of the animal. The organs of locomotion, of digestion, of circulation, of respiration, of reproduction, each are fitted, as it respects mechanism and structure, to their use and end in a manner which is found to be more and more admirable just in proportion as it is better and better understood. Say not with the Epicureans of old that the accidental configuration of these parts is the cause of the different uses made of them, since, to adopt the answer of Galen, "the young ones of the several kinds of animals, before their parts are grown up, strive to make the same use of them as others do. Thus, take three eggs, one of an eagle, another of a duck, and a third of a serpent, and, after they are hatched through a moderate heat, we shall find that when they are but newly hatched, the two first will be striving to fly before they have wings, and the third endeavoring to creep away on its belly; and if you breed them up to greater perfection and bring them into the open air, you will presently see the young eagle mounting into the air, the duck waddling in a pool, and the serpent creeping under ground." Before we ascribe this to necessity or accident, we should wait with Stillingfleet "till we see a thousand blind men run the point of a sword in at a key-hole without once missing; till we find them all frisking together in a spacious field and exactly meeting all at last in the very middle of it; till we find, as Tully speaks, the annals of Ennius fairly written in a heap of sand, and, as Kepler's wife told him, a room full of herbs, moving up and down, fall down into the exact order of salads,—then may we think the atomical hypothesis probable, and not before."*

In considering the mechanism of man and other animals, there is another point which well deserves our notice: it is the perfect adjustment between the living forces in animals, and, we may add, in vegetables, and the forces in inorganic or

* Stillingfleet's *Origines Sacræ*, i. p. 463.

inanimate nature. This is such that any material change would induce the utmost disorder and suffering. Suppose, for example, the muscular power of animals remaining the same, the force of gravity were to be materially increased, "it is manifest," says Whewell, "that all the swiftness and strength and grace of animal motions must disappear. Now, why is it that the quantity of matter in the earth or in animal bodies corresponds so happily with the intensity of the vital forces? We can see no necessity for the precise magnitude that the earth now has, nor can we assign any reason why it should not have been as large as Jupiter or as small as Mercury, since the masses of the planets seem to follow no regular law."* The same remark may be applied to the size of animals, and also to that of vegetables, in which last we see the same perfect adjustment between the force which raises the sap, the magnitude of the plant, and the intensity of gravitation. I can conceive of no explanation at all adequate to the difficulty, except that these quantities, in themselves so independent of each other, have been *selected* with special reference to the wants and enjoyments of sensitive creatures, and that they thus serve to proclaim the watchful care and beneficence of that Being who weighed the mountains in scales and the hills in a balance; who holdeth the waters in the hollow of his hand, and who doth not suffer even a sparrow to fall unnoticed to the ground.

Throughout this chapter we have dwelt on the fearful evils which would ensue were any material change to be made in the mechanical constitution of the universe. It is a subject on which beings so limited and straitened in intelligence as we are, ought to express themselves with the greatest diffidence. But one consideration besides those already mentioned, and one significant of the Wisdom and Beneficence of the Author of these laws, may be found in the fact that any ma-

* Bridgewater Treatise.

terial change of which we can conceive, whether in the laws of gravitation or of heat, of friction or of muscular power, would draw after it not only certain direct evils, but would be attended also by an almost infinite train of incidental and collateral evils by reason of the innumerable other laws and operations with which that single one would be found to be connected and complicated ; and those evils, as far as we can comprehend, could be averted only by such changes in each one of those other laws as would adapt them to the new state of things created by the first change. Thus, one change in the mechanical and material constitution of the universe would seem to introduce the necessity of further change throughout all its parts. The human mechanician can arrest the motion of his machinery,—can take out one of its parts and substitute another of different construction, and perhaps not alter thereby essentially the general working of the instrument. Not so with the mechanism of the Universe, more intimately connected and interdependent as it is in its parts, more complicated as well as more refined in its movements. Change, for example, the constitution of the air with respect to the transmission of sound and light, and no finite intelligence could compute the number and magnitude of the alterations which would become necessary throughout nature in order to restore the operations of the system to its harmony and benignant influence. Corresponding changes must take place in the organs for seeing and hearing of all orders of animals on the globe. These last changes, again, would necessitate corresponding alterations in the structure and workings of that invisible and spiritual mechanism through which impressions made on the external organs become sources of knowledge, of emotion, and of action. So, again, in sounding and luminiferous bodies, there must be changes to enable them to adapt the force or direction of their vibrations to the altered nature of the medium they are to traverse ; and who knows that the mechanical constitution of the atmosphere, with respect to

sound or light, could be altered without altering all its other properties, so that as a medium of respiration—a source of winds and vapors, a moving-power in mechanics, an instrument of voice—its value might all at once be destroyed?

With one other remark we will close these Mechanical Illustrations. We have thus far directed attention to the proximate causes of motion,—such as heat, gravitation, and muscular power,—and have shown, in some few respects, how happily these have been adapted to show forth the goodness, wisdom, and holiness of God. But, as proximate causes of motion, each of these forces prompts the mind to inquire after the ultimate and efficient ground of all motion and all force. Whence did heat and gravity and muscular contractility derive their energies? They are but unconscious involuntary agents. They can originate nothing. In themselves inert, passive, they can have only what has been given,—can exert but the power that has been borrowed from without. "Nothing," says Berkeley, "that we know under the name of body or matter contains in it what can possibly be the beginning or efficient cause of motion;" and the ancients, as long ago as the time of Anaxagoras, laid it down as an apothegm that all motion has its origin in mind. How large a portion of our own mechanical motions originate in the previous volition of our minds, experience clearly teaches; and this experience, combined with the evident and acknowledged inefficiency of all matter and all mechanical, chemical, or vital forces, as primary and independent sources of motion, and with the irrepressible disposition of untutored children and savages, to ascribe all mechanical changes to the presence of a living, intelligent power,—all this seems to force upon us the conviction that the Will of an Infinitely-powerful Being can alone account for the various and stupendous movements of the material universe. "All that is in motion," says Aristotle, "refers us to a mover; and it were but an endless adjournment of causes were there not a *primary* immovable Mover."

CHAPTER II.

CHEMISTRY A RELIGIOUS TEACHER.

OF the Sciences which have distinguished themselves during the last century as practical Benefactors of mankind, perhaps none is more worthy of notice than Chemistry. Within that century it has bestowed on the mechanical arts their most powerful auxiliary, since it is within that time that the Steam-Engine has acquired most of its efficiency and value. It has also contributed to improve and cheapen many of the operations in different departments of industry, such as bleaching, dyeing, sugar-refining, and tanning. But in every such useful application of Chemical Science we behold a new proof of Divine Wisdom and Goodness, and even of Divine Rectitude, since each shows that the natural world has been stored with powers and substances which remain latent till they are drawn forth by man's inquisitive mind and skilful hand; but which are no sooner discovered than they serve to redouble the power of his Industry and the means of his enjoyment. Here, then, as elsewhere, there is a twofold indication of the Divine Beneficence: 1st, in constituting agents so perfectly fitted for man's service and the promotion of his physical well-being; and 2d, vouchsafing the possession and use of them only on conditions which conduce directly to his intellectual—and may we not add?—to his moral and spiritual improvement.

The use and application of Chemistry in Agriculture and Manufactures is attracting, at present, a large share of attention throughout the world. It will be our object, in this chapter, to suggest another use of the Science, not less interesting or important, though less frequently discussed. If the

improved cultivation of the soil be of great moment to mankind, it should not be forgotten that there is another and yet higher culture, even that of the mind and the heart. Man eats and drinks and builds and provides raiment, not because these in themselves are great and ultimate ends of his being, but mainly because he thereby better fits himself for that *moral and spiritual husbandry* which would rear, on the soil of his own soul, the undying plants of faith, hope, and charity, and which can alone supply him with that bread from heaven that fills without satiating the cravings of an immortal nature. To show how the study of Chemical Philosophy can be made to conduce to this object is the special aim of this chapter.

The religious instruction to be derived from Chemistry will become more apparent if we consider—1. The *Laws of Chemical Affinity*. 2. *The materials* which have been provided in nature for this affinity to act upon. 3. *Its agency* in maintaining the phenomena of *animal and vegetable life*.

THE LAWS OF CHEMICAL AFFINITY.—Chemical Affinity is a force which acts not on masses of matter, but on the particles or molecules which compose such masses. Its attractive force is exerted only at *insensible* distances; it acts only between substances of different kinds; and its effect is to change only the interior state of bodies. When a force acts at sensible distances and on masses of matter, it is called a *mechanical* force. When it acts at insensible distances, but between homogeneous particles, it is called *cohesion*. *Affinity* acts only between heterogeneous particles, just as electrical and magnetic attraction is an attraction only between opposite or heterogeneous polarities. Herein Chemical Affinity differs from cohesion, as well as in the fact that it unites particles not by aggregation, as cohesion does, but by incorporation; such that there is a mutual union and interpenetration of the elementary substances, in many cases so perfect that the distinguishing properties of those substances disappear, and properties wholly new are developed. Finally, particles united by

cohesion are separated by abrasion, or by a dividing plane, and when thus separated remain unchanged; particles combined by affinity need to be decomposed, and then each constituent is found to resume all its original qualities. In many cases both the composition and decomposition of bodies are effected by means of electricity, and it may be that chemical affinity is only a modification of that mysterious and all-pervading agent. On this question, however, we need not enter.

It will be evident, that in considering chemical phenomena and laws, the mind must be directed beyond bodies, as they usually exist in nature, to the simple or elementary substances out of which they are constituted. Of these *simple* substances Chemists have discovered some *sixty* in all, of which *forty-eight* are metals. The endless variety of compound bodies, then, which we observe in nature,—whether they be solid, liquid, or aeriform, organic or inorganic,—may be resolved into two or more of these simple bodies. Whatever chemical changes take place, whether of composition or decomposition, whether they transpire in animate or inanimate substances, are but the marching and countermarching of these same elementary substances under the direction, in part, of affinity; and what is especially worthy of remark, the greatest proportion of these changes, especially as they occur in organized bodies, the marvellous transformations which substances undergo in the bodies of animals and of plants, involve, for the most part, *but four out of these sixty simple bodies*, viz., *oxygen, hydrogen, nitrogen, and carbon*. How admirable the skill and economy which, out of so small a number of materials, can elaborate such an infinite diversity of objects!

Here, then, is an attractive force (chemical affinity) between heterogeneous substances. The general value of such a force is too obvious to require remark. Without it all bodies or masses of matter would be homogeneous, and, accordingly, the different kinds of bodies could be multiplied only by the creation of so many independent and different kinds of mat-

ter. Now some sixty different simple substances yield by combination an endless diversity in bodies. Without affinity we must consent either to surrender this diversity or must tax the Creator to modify his creative energies in all the countless ways referred to. But remark further in respect to this force, that it is, 1st, a *graduated force*. A simple substance, having affinity in a slight degree for a second, may for a third have a stronger affinity, for a fourth one yet stronger, and so on to any extent. Thus, alcohol has an affinity for camphor, for it will dissolve it; but it has more affinity for water, for if water be poured upon camphorated spirits, the alcohol separates from the camphor and unites with the water. Or, to take a better example from an old chemist (Stahl): "In spirit of nitre dissolve silver; put in copper, and the silver is thrown down; put in iron, and the copper goes down; put in zinc, the iron precipitates; put in volatile alkali, the zinc is separated; put in fixed alkali, and the volatile alkali quits its hold."* Thus we have spirit of nitre preferring, in succession, six bodies: first silver, for which its affinity is feeblest, then copper, then iron, then zinc, then volatile alkali, and lastly fixed alkali. Where affinity is very weak, as between water and most of the solids which it dissolves, or as between the two gases that form the atmosphere, the properties of the ingredients are not wholly obliterated, but merely qualified, or, as it were, diluted, thus the better adapting them to use. The gradations in this force to which we have referred, open boundless scope, too, for the play of what is called elective affinities, and thus secure that compositions and decompositions shall continually take place both in nature and under the direction of man.

But, 2d. If we take two (simple) substances, having a mutual affinity, it is a fact deserving special consideration that *these same substances can be combined in different proportions*,

* Whewell's Philosophy of the Inductive Sciences.

and that the result, in each case, is a new compound, differing from the preceding compounds as much, perhaps, as they differed from the ingredients. Thus, chlorine and mercury united in one proportion form the *medicine*, calomel; in another the *poison*, corrosive sublimate. If from the inorganic we pass to the organic world, we find in vegetables that "the sweet crystallizable principle of the sugar, the bitter febrifuge of the willow bark, the fixed and permanent acid of the grape, the highly volatile acid of vinegar, and many other equally well-contrasted substances, are composed of the same three elementary bodies, merely differing slightly in the proportions in which they are associated. A very few grains of the vegetable alkali, morphia, or a fraction of a grain of another member of the same chemical family, strychnia, will destroy life. The bread we subsist upon owes its nutritious power to a combination of the very same elements which, in other circumstances, give rise to the poisonous juice of the poppy, or the still more deadly principle of the *nux vomica*."^{*} Thus we see to what a multitude of different and even opposite uses Infinite wisdom has been able to apply the very same substances, merely by varying the proportions in which they can combine.

But, 3d. It is equally worthy of remark that *the number of these compounds*, which can be formed from a union of the same elements in different proportions, is *limited*, extending to no cases except those in which the numbers representing the proportions are *multiples* of those which represent the simple ratio of combination. The final cause of this seems to be obvious. "Were it otherwise," says Mr. Whewell, in his *Philosophy of the Inductive Sciences*, "were each element ready to combine with any other indifferently, and indifferently in any quantity, we should have a world in which all would be confusion and indefiniteness. There would be no fixed kinds of bodies; salts and stones and ores would ap-

* Fownes's Prize Essay.

proach to and graduate into each other by insensible degrees. Instead of this we know that the world consists of bodies distinguishable from each other by definite differences, capable of being classified and named, and of having general propositions asserted concerning them. And as we cannot conceive," the same writer adds, "a world in which this should not be the case, it would appear that we cannot conceive a state of things in which the laws of the combinations of elements should not be of that definite and measured kind which we have above described."* In thus maintaining that these laws are *necessary*, and that they form an indispensable element in our conceptions, Mr. Whewell has reproduced, in connection with Chemistry, an idea which pervades the great work just mentioned, and which he applies, in the spirit of a Platonic philosopher, to all physical laws whatever. In this respect there seems to be a material discrepancy between the views contained in this his last and most elaborate work and those set forth in his *Bridgewater Treatise*, where he frequently insists that the laws in nature have the character of arbitrary appointments, selected not from any intrinsic necessity, but in part, at least, because they were such as would conduce to the Divine glory and the welfare of all animated beings. The latter would seem to be the more correct view. In maintaining that "we cannot conceive a world" in which the laws of chemical composition should not embrace the principles of definite proportions, Mr. Whewell appears to have forgotten that in the two preceding sentences of the same paragraph he had himself placed before his readers a distinct account of what would have been the "indefiniteness and confusion" of a world in which this law did not obtain. The truth seems to be that these laws have the character not of absolute, but of *relative*, necessity; or, in other words, they are necessary, not in themselves, but in order to promote the greatest amount

* *Philosophy of the Inductive Sciences*, v. ii. p. 132.

of good and be most in conformity with our notions of an Infinitely-wise and perfect Lawmaker; and it is in the fact we *can* conceive of other laws immeasurably less beneficial to his creatures and less conformable to the notions of perfection which we assume that *He* has given us,—in this fact we find evidence that the existing laws have been *selected*, and that their selection implies Wisdom and Goodness.

We cannot dismiss this branch of the subject without noticing the refutation which is given by these laws of chemical affinity to the notion of the *Eternity* and *Self-existent* nature of matter. Examined by these laws, each particle or atom of matter is found to possess certain specific and invariable properties and certain definite relations to atoms having other properties. These properties and relations cannot be considered without suggesting to us the idea of an *Intelligent Cause*. Each atom in nature has “all the essential characters,” to use the happy language of Sir John Herschel, “at once of a manufactured article and a subordinate agent.” And so if we consider the *action of chemical forces* on a great scale in nature, we shall find that, like mechanical forces, they point distinctly back to a *beginning* of the present system. It has been suggested by some philosophers that the heat observed in the interior of the earth, and found to increase as we descend towards the centre, does not arise out of an originally hot condition from which the globe is gradually cooling, but results from chemical action constantly going on *now* among the materials of the earth’s substance; and this conjecture, feebly supported as it is, is sometimes employed to negative the idea that the past can have differed from the present, or that any other forces than those now in operation can ever have been exerted in nature. The true inference, however, as has been well observed by another,* would be precisely the reverse, “for chemical forces, as well as mechanical, tend to equilib-

* Whewell.

rium, and that condition once attained, their efficacy ceases. Chemical affinities tend to form new compounds, and though, when many and various elements are mingled together, the play of synthesis and analysis may go on for a long time, it *must at last end*. If, for instance, a large portion of the earth's mass were originally pure potassium, we can imagine violent igneous action to go on so long as any part remained unoxidized; but when the oxidation of the whole has once taken place, this action must be at an end; for there is on the hypothesis no agency which can reproduce the deoxidized metal. Thus, a perpetual motion is impossible in chemistry, as it is in mechanics, and a theory of constant change, continued through infinite time, is untenable when asserted upon chemical, no less than upon mechanical, principles."

We have thus looked at *chemical affinity*, and indicated some portions of the religious instruction to be gathered from its nature and laws. Let us now consider the MATERIALS which have been provided for this force to act upon, and out of which, in conjunction with other forces, it elaborates that vast variety of bodies to be observed in animate and inanimate nature. Let it be remarked here that we are not to suppose that the enjoyments of sensitive beings, or even the mental and moral improvement of mankind, forms the only object of this wondrous economy in the midst of which we dwell. The artist sketches from nature, or he embodies on canvas the creations of his fancy, not merely to gratify others but often that he may pour forth the overflowing fulness of his own creative energy and enjoy, in clearer and more vivid contemplation, his own conceptions. May it not be thus with the Creator of the Universe? When we consider what amazing and abounding displays of the Divine munificence and handiwork are hidden in the dark chambers of the sea, or in the deep recesses of the wilderness, where the eye of cultivated man never rests, we must feel that to promote his enjoyment or the enjoyment even of the unnum-

bered orders of living beings that throng the air and roam over the earth and swarm in all waters, is not the only object of an Infinite Creator. Yet, doubtless, it is one great object; and, in dwelling upon the indications of provident wisdom and goodness which we observe in the chemical constitution of the globe, we are compelled, for the time, to make it the chief subject of our contemplation. It ought never to be forgotten, however, that "these are but parts of his ways;" that it is not for man, even in his best estate, to draw aside all that veil which enshrouds the Creator's universal plans; that we can lift but one corner, as it were, of such a veil, and that while we may safely judge of the use and import of the parts exposed to view, in some respects, there will yet remain other and perhaps infinitely higher respects in which even their uses will be hidden from our sight.

Organic Chemistry.—In attempting to show how the Creator has manifested his foresight and goodness in providing the proper *materials* for chemical affinity to act upon, in adjusting the relative *quantities* of these materials, and in so locating them that beneficial action will take place spontaneously, or be more easily compassed by man, we proceed at once to the subject of *Organic* or *Vital Chemistry*, and to the interesting relations which subsist between animals, vegetables, and unorganized substances.

Every animal has a body, composed of material parts and organs, by means of which *life is maintained* and a *relation is established* between such animal and the external world. In other words, he has organs of *nutrition and assimilation* essential to life, and *organs of sensation and motion*, without which external objects could not act upon him, nor he upon them. The entire body of the animal is built up out of substances which it receives as food, and which must be of such a nature that they can furnish the requisite material for all the different parts and tissues, such as bone, cartilage, sinew, teeth, skin, hair, flesh, etc. No food answers this description unless

it be an organized substance that once had life. Unorganized substances, such as carbon, hydrogen, or nitrogen, can furnish directly no nutriment to animals. On the contrary, when taken into their systems, in an elementary state, these substances would either be expelled as enemies or would be retained only as a clog that paralyzes vigor and is likely to accelerate decay and death. Vegetables, or the flesh of other animals, must constitute the aliment of all animals; and where this aliment is flesh, it will be found, by tracing it back to its source, that it was originally formed out of vegetables; so that the vegetable world becomes the great laboratory in which food is prepared for the subsistence of the countless myriads that swim, or creep, or run, or fly.

But whence do vegetables derive their nourishment? They, too, live and grow, rising from the small seed buried in the earth till they become a tree, a shrub, or plant. Even after they attain the fulness of their growth they still need aliment to repair a waste continually going on. Whence, then, can vegetables derive the material for building up their superstructure but from the inorganic world mainly,—from the earth, air, and water? Unorganized substances afford food for vegetables; vegetables supply food for animals. The body of an animal, if decomposed, will be found to consist of various simple bodies, or elementary substances, combined in certain proportions. But there is no assimilating power in the animal itself equal to the task of achieving such a transformation as those simple bodies must undergo before they can become flesh. The mysterious but all-subduing power of *vegetable chemistry* must be applied to them in the first instance. By its agency they are made to approximate the character and condition of animal substances, and then the simpler and less powerful action of *animal chemistry* is super-added, in order to complete the transformation.

No artificial combination of those simple bodies, however exactly it may imitate those elaborated by the process of vege-

tation, can be rendered nutritious. Vegetables, therefore, stand between animals and unorganized substances as a sort of kitchen in which the latter are prepared—as it were, *cooked*—for the consumption of the former. After being thus manufactured or cooked, they take the name of *proximate* as distinguished from simple elements; and when considered as food for animals are divided by Liebig into two kinds,—the first, called *plastic elements of nutrition*; the second, *elements of respiration*. The first class, comprising such substances as vegetable albumen, fibrin, and casein, seems to be employed in the repair and nourishment of the body. The second class, including, for instance, starch, gum, sugar, mucilage, etc., as they exist in plants, constitutes what the distinguished chemist just named has happily denominated *fuel-food*. We say happily denominated, for, strange as it may appear, these substances do seem to be actually burned in the body of the animal, in the capillary blood-vessels throughout the whole system. Being first converted into a part of that body,—incorporated with it,—they are then slowly consumed or burned, in order to furnish that promethean heat which, in one sense, sets in motion the whole machinery of life. We speak here advisedly. To borrow the words of another,* “it is with premeditation and choice of terms that the capillary system is termed a fireplace or furnace.

“Carbon and hydrogen are burned in the blood, and this to an extent which will strike with surprise, and at first incredulity, those unaccustomed to such considerations. Many ounces of carbon are, in every individual, daily rejected from the lungs as carbonic acid. It is impossible that combustible matter can thus be disposed of without the evolution of a vast amount of heat,—as much heat, in fact, as if it had been burned in a fire-grate. This heat is manifest in the elevation of temperature which the animal frame always possesses above

* Fownes's Prize Essay, p. 105.

that of the surrounding medium,—an elevation of temperature always in direct proportion to the amount of nervous and muscular energy of the animal, and to the vigor of its respiration, but never in any single case altogether absent."

"The internal capillary combustion is the source of animal heat.

"Thus much for the body. Everywhere that blood-vessels are to be found, every part where nervous influence is perceptible, every organ, every tissue, muscle, and brain, and nerve, and membrane waste away like a burning taper, consume to air and ashes, and pass from the system, rejected and useless; and where no means are at hand for repairing these daily and hourly losses, the individual perishes,—dies more slowly, but not less surely, than by a blazing pile. He is, to the very letter, burned to death at a low temperature; the various constituents of the body give way in succession: first, the fat disappears (that is the most combustible, but at the same time the least essential),—it is sacrificed; then the muscles shrink and soften and decay. At last, the substance of the brain becomes attacked, and madness and death close the scene. This is starvation."

The provisions which the Creator has made for maintaining an equilibrium between the organic and inorganic worlds should be considered here. Animals subsist on vegetables; vegetables on inorganic matter, especially on gaseous matters in the air, prepared for their consumption by the action of solar light and heat,* and received generally through the root mixed with water. Now, if there were no provision for restoring the matters thus abstracted from the air and earth, it is plain that these inorganic materials would ultimately be exhausted. But, in the process just described, we have seen that the animal combustion which supplies vital heat, and, in some measure, at least, nervous activity and force, disengages,

* Fownes's Essay.

like all other combustion, inorganic constituents, which thus return to the air and soil to recommence their labor in building up living vegetable structures. The carbonic acid gas expelled from the lungs at each expiration is precisely like that which ascends from fuel blazing in a grate or stove; and animal manures, according to Liebig, are but the ashes of the food produced at first in our fields, and then burned in the bodies of men and animals. In this way matter, which is constantly withdrawn from the inorganic world to serve as food, having fulfilled its appointed task, is sent back to that world, and thus keeps up one constant round in the service of men and animals. If vegetables *produce* neutral azotized substances, such as albumen and fibrin, animals *consume* or decompose them. If the vegetable manufactures sugar, starch, and gum out of oxygen, hydrogen, and carbon, the animal decomposes the manufactured article, and it goes back as oxygen, hydrogen, and carbon to the place whence it came. If both water and carbonic acid are decomposed by the vegetable, both are produced again by the animal. The vegetable, to borrow the language of the French chemist, is "an apparatus of reduction;" the animal is an apparatus of oxidation or combustion. What the one takes away from the inorganic world the other gives back.

Let us now direct our attention to the first term of this ever-recurring series. We have seen that inorganic nature, more especially the air when acted upon by the sun, is the great primary source of nutriment, even for animals,—vegetables being the chemists or cooks that reduce this nutriment to a proper state for animal consumption. Do we find, then, in the constitution of dead matter, or, in other words, of inorganic substances, in their properties or in the proportions in which they exist, any evidence of Divine forecast and wisdom?—any marks of an admirable Providence, such as the Bible ascribes to Him who heareth young ravens when they cry, and giveth meat even to famishing beasts of prey? This

question we can answer with more precision when we have specified what is the primary food for animals; or, in other words, what simple substances enter into the composition of animal bodies, and what provisions exist in the air and earth for supplying them. Besides its four main elements,—oxygen, hydrogen, carbon, and nitrogen,—the body of every animal contains, also, in much smaller proportions, soda, potash, lime, phosphorus, iron, and sulphur. Soda, according to Liebig, exists largely in the bile and blood; potash in the muscles; iron and sulphur in the blood; lime, both as a carbonate and a phosphate, in the bones and teeth. Is it not, then, most interesting, as well as most indicative of God's parental foresight, to find that all these substances are provided not only so, but are stored up in such places and in such proportions as are best calculated to meet the necessities of animals? It is like the accumulation of stores of provisions at different points over a great extent of country, which a wise general makes on the eve of a campaign,—with this difference, that where the army supplies, in respect to any article, are deficient, the consumption of the men must be restricted. Whereas, in the great commissariat system of the Creator, any apparent deficiency in *supply* is made up usually by the rapidity with which the article is brought in. It is in this particular like the economy of a commander-in-chief, who should employ his men in raising by tillage a portion of the food they need; or, it is like circulating coin, where the same piece becomes the agent of effecting a great many different exchanges.

Take carbonaceous matter, for example. Every well-fed, healthy man employed in labor consumes about fourteen ounces of carbon daily; so that the whole amount consumed daily over the surface of the earth by men and animals must be enormous. But all, or nearly all this carbon being burned in the blood, goes back as carbonic acid into the air; and there, if it were allowed to accumulate, the baleful gas would soon destroy the life which, as carbon, it has previously cherished. But that

which is deadly to animals is the appointed aliment of vegetables. As fast as carbonic acid gas is given off from the lungs of the one its carbon is taken up by the leaves of the other; and thus the normal proportion of this irrespirable gas in the atmosphere is never but about one-two-thousandth part of the whole, which is perfectly harmless, and at the same time its agency as aliment for plants and animals is perfectly secured.

In the air and in water are abundant magazines for supplying oxygen, nitrogen, and hydrogen; and, did our space permit, it would be instructive to trace the provisions which have been made for replacing such portions of them as are withdrawn to sustain animal and vegetable life. Omitting this, however, we proceed to inquire whence the animal frame derives its alkaline and earthy constituents,—its soda for the blood and its lime for the bones. They come immediately, of course, from the vegetables, which are taken into the system as food, and which contain more or less of soda, lime, potash, sulphur, and iron. Here, again, is evidence of prospective and far-seeing arrangements. Iron, sulphur, and lime exist in small portions in almost every soil, and are taken up from it. The soil itself—*i.e.* the earth's upper covering—is made up mainly of sand, clay, and calcareous matter, which have been ground down, by the action of water, from those great mountain-chains which ridge and furrow the surface of the globe. These mountain-chains consist principally of granite; and in this granite we find, besides the sand and ordinary clay, that potash and phosphoric acid which are important constituents in bone and muscle, so that, to use the language of another, “every earthquake which has in bygone times fractured and dislocated the solid strata of our planet; every flood which has swept over the ancient continents; every change of level which has elevated the bed of ocean, or depressed the land beneath its surface, has contributed more or less to bring about that mixture of materials that now form the fruit-bearing

soil,—the inexhaustible source of prosperity and strength. Is it too much to infer that all these things had reference to that future condition of the earth when it should become the habitation of beings capable of appreciating the wonders around them, and deriving mental support and guidance from the contemplation of these wonderful provisions while enjoying with thankfulness the physical comforts to which they give rise?"

Another point in the provisions which have been made for the sustenance and nutrition of animals, is not unworthy of notice. Unlike other animals, man is framed to dwell in every part of the earth,—amid the snows of Lapland and the eternal ice of the Polar circle, as well as beneath the intense heat of torrid climes. He is also obliged, in many cases, to undergo great vicissitudes of heat and cold, moisture and dryness, labor and repose. Now, in very cold climates, the difference between the temperature of the air and that of the animal frame is so great, and warmth is so rapidly abstracted from the latter by the former, that much more vital heat must be generated within, in order to maintain the normal state of the body, than would be necessary in warmer latitudes. In other words, either the furnace grate must be supplied with more fuel, or a fuel that evolves more caloric must be substituted. And how is this emergency provided for?

In a manner which ought to impress the most thoughtless. In tropical climates, where there is little disparity between the temperature of the air and that of the body, and where the luxuriance of vegetation supersedes the necessity of a laborious tillage, men want little fuel-food, and but little is provided. The rice and fruits which grow in such profusion in these climates contain, besides water in a free state, only oxygen and hydrogen in the proportions to form water; and they are bodies that yield, when burnt in the blood, comparatively little heat. On the contrary, in the Arctic and Antarctic regions, and generally where the cold is severe, man is furnished with

an abundance of animal flesh and fat,—substances that contain a great proportion of carbon as well as hydrogen; and being oxidized, these yield copious supplies of heat to replace that which constantly escapes from the body. At the same time, in order to provide a sufficient amount of oxygen to consume this fuel-food, the atmosphere, in such regions, is more dense; and the individual, being compelled to win his subsistence by means of severe muscular effort, his inspirations are also deeper and more frequent. We all know how much labor and cold weather contribute to sharpen our appetites, and we may have observed, too, that it is on the return of winter that game is most abundant and best supplied with fat.

Look, again, at the nutriment everywhere provided by a Beneficent Creator for the young of the higher order of animals. No sooner does the parent conceive than a mysterious change takes place in the secretions of her frame, one consequence of which is the formation of a liquid called milk, that is found to be precisely adapted to the desires and wants of her progeny after birth. The leading constituent in this liquid is a substance (casein) almost identical, in composition, with muscular fibre and with the albumen of the blood. Hence but the simplest change is necessary in order to transform it into the flesh of the young and helpless animal. Milk, also, contains a large proportion of earthy phosphates, in the very state of solution that most facilitates the formation of bone,—a process all-important at this period. It contains, in addition, liberal quantities of butter and sugar of milk, which answer the purpose of elements of respiration, the breathing of children being, as we all know, very rapid, and the combustion that takes place in their blood proportionably energetic. To crown this list of adaptations, and show that in the secretion of this liquid no ingredient which could promote the nourishment and well-being of the young animal has been omitted, chemists have also found that it contains saline matters, and a slight proportion of iron.

Nor is this provision for the nourishment and growth of the young to be observed only in the higher classes of organized life. It is found wherever infant life exists, and it comprises the period that precedes, as well as that which follows, birth. Take the seed of a plant, for example ; it is, in fact, its offspring in the foetal state, or that state which precedes birth ; it is the germ of a new plant, inclosed in nutritious matter on which that germ subsists and grows, until its organism is developed and the matter is consumed ; and then it bursts forth, the radicle to seek fresh nourishment in the earth, the seed-leaves to push upward and gain stimulus and aliment from the air and light. It is the same with the egg of the oviparous tribes, and with the ovum of the higher orders of animals. The ovum is either surrounded by nutritious substances which are gradually assimilated as soon as its energies are roused into action, or it has the power of abstracting aliment from the body of the parent. How beautiful and touching this provident care,—this solicitude for the preservation and nourishment of every living thing ! “ Doth God take care for oxen ? ” said Paul, when alluding to that benevolent provision of the Mosaic law which forbade the muzzling of animals that were treading out corn. All nature seems to resound with an affirmative answer. Not only does He watch over the sustenance of the toiling beast, as over that of the laboring man ; not only does He cause the earth to teem with abundance for animals that roam abroad in unrestricted freedom,—He cares for the young lion, for the helpless little ones of every tribe, for the yet imprisoned tenants of the womb, for the seed that falls to the earth or floats on thistle-down through the air. Nay, in respect to the seed of plants, He evinces yet more of this far-reaching and parental providence. For months *before the seed forms and ripens* processes are on foot to facilitate and secure that event ; and these processes have been recurring constantly and regularly, from the first day that “ the earth brought forth grass and herb yielding seed

after his kind, and the tree yielding fruit, whose seed was in itself after his kind." The process of seed-bearing, as well as that of efflorescence, which precedes it, is exhausting to a plant. None of the parts or organs employed in these operations contribute like leaves to the nutrition of the plant; and at the same time soluble gums and saccharine matters are withdrawn from its whole system, in order to form the fruit and seeds. How admirable here, also, the provision which has been made to secure the desired end, and yet diminish the evils of this exhausting process! The time which precedes flowering, when the vegetating power is most active, seems to be diligently employed in treasuring up, in different parts of the plant, a quantity of starch "ready for use when the pressing occasion arrives." It is then redissolved and added to the general stock of nutriment. There is reason to apprehend that, but for this beneficent arrangement, the ripening of seeds could hardly take place. As it is, the important process is no sooner over than the plant exhibits every sign of exhaustion, and often dies.

We have thus touched upon a few of the ways in which God has exerted his marvellous wisdom and kindness in providing the raw *materials* out of which Chemical Affinity, in conjunction with another force to be discussed hereafter, elaborates the substance and phenomena of organized bodies, whether vegetable or animal. But, in addition to the simple substances that enter into the composition of plants or animals, there are others which, though not employed in this way, are yet useful to man in the various arts of life. Some of them, however, are intensely poisonous, and it is a subject for grateful consideration that, in such cases, these substances have either been so masked, by mixture with other substances, as to be generally harmless, except where there is the requisite knowledge to isolate and use them properly; or else they have been so sparingly provided that they are not likely to prove injurious. What woes, for example, would not have

been occasioned if opium, instead of being extracted only by means of great labor and skill from the poppy, had grown abundantly on trees like apples? What would have been the effect had the oxide of lead and of copper been as common as that of iron? The latter, in small quantities, is not only harmless, but, as we have seen, is a constituent of the animal frame, while in the operations of industry it is, of all materials, perhaps, the most indispensable. On the other hand, the minutest portions of lead absorbed into the system from day to day, lead at length to disastrous results. So with carbonate of lime, as compared with carbonate of baryta. Had the latter been as prevalent as the former, it may be doubted whether animals could have existed on the earth.

It is, also, worthy of remark, that where dangerous substances are constantly necessary in order to maintain the economy of life, they are almost always laid under bonds for their good behavior by being united with other substances, which neutralize or mitigate their destroying power. How wonderful that the air we breathe, the water from which we derive so much of refreshment and essential service, should each be made up of elements that, in a separate state, are fatal to life! Oxygen, for example, if respired alone, is an overpowering stimulant, and an animal would quickly burn to death or be prostrated by asphyxia under its crushing influence. Hydrogen is highly inflammable, and, if spread in a free state throughout nature, it would frequently explode with the disastrous violence now experienced only in the depths of mines. Nitrogen, which constitutes four-fifths of common air, cannot be breathed with impunity by any animal in its pure state. So of most of the elementary principles. If liberated from their affinities and "sent abroad into the world, like so many demons let loose, they would instantly bring destruction upon the whole fabric."* With what matchless skill,

* Dr. Prout.

with what parental care have they been mingled and combined so as not only to mutually tame their fierceness and disarm them of their destructive energy, but even to transform them into the most beneficent ministers of health and life! Is it said that the Creator might have displayed his wisdom still more illustriously if these elements had been constituted without such noxious properties? We answer, that we shall not deny that they might have been so constituted, though to affirm it seems arrogating a wisdom not vouchsafed to man. But we may say that if these elements had been created innocuous, men would have wanted most impressive mementos, which they now have, of their own feebleness and insufficiency. We are now reminded, whenever we look at the chemical constitution of nature, that we are encompassed by destroying angels; that there are volcanic fires all around as well as beneath us; that Infinite Wisdom, Power, and Goodness must have been needful to rear a peaceful abode for man out of such stormy elements, and are still needed to preserve it; and that our gratitude should be proportioned to our dependence. Did no fierce agent ever manifest itself, no poisonous exhalation ever break forth to show how all man's powers and thoughts can wither beneath its blighting touch, we should feel that this physical system was eternal; that it contains within itself a guarantee for its stability and perfection, and that no grateful thoughts nor earnest supplications need ascend to our Invisible Father and Protector. We have now almost daily mementos of our frailty,—daily remembrances of the marvellous wisdom and power with which, as if before our eyes, God is condescending to marshal and order these fiery elements, and how easy it would be for Him who holdeth the winds in his power to let loose such elements to destroy individuals, nations, or even a world.

One can hardly help trembling when he considers on what an infinite number and variety of chemical adjustments the

welfare and existence of living beings depend,—adjustments between agents which are essentially distinct from, and independent of, each other, and whose mutual adaptation and congruity can be referred, therefore, to nothing but design. To appreciate, even in the slightest degree, the inexpressible importance of these adjustments and the Divine wisdom and goodness they manifest, take but one of them; as, for example, the relation in nature between oxygen and hydrogen, both as to quantity and quality, and suppose that the relative proportions in which these bodies subsist in nature were reversed, and that hydrogen became as predominant as oxygen now is, or suppose that either underwent a material change of properties, the quantity remaining the same. By reflecting, though for only a moment, on the consequences which would ensue, we shall find that disorder would be instantly spread throughout the material universe. Water, the air, the earth, metals, would all lose their peculiar value. The means of vegetation and of healthy respiration would be withdrawn. And so with a change in any of the leading adaptations that we observe by the aid of organic or inorganic chemistry. Everywhere we observe traces of a parental foresight which would make all things subservient to the welfare and enjoyment of sensitive creatures. Elements seem to have been constituted with reference to the most important compounds they were to form, such as water, air, and the like. These compounds, again, seem to have had antecedent reference to the plants and animals which were to appear in due time and to derive their sustenance from them; and thus all seem to form parts of one grand design that stretches from the beginning to the dissolution of the great globe on which we dwell. All are parts in the all-comprehending and eventful physical drama now in progress,—a drama, every stage of which seems to afford evidence that it had its commencement in time, and that in time it is destined to have, in one sense, its end.

— We say in one sense; for in another Chemistry seems to be

the herald even of a physical, and, much more, of a mental, existence, that is to be eternal. Under the influence of affinity, chemical elements are constantly changing their relations, but *their existence remains untouched*. Bodies decompose. If living, they die; new bodies start up before us. But the simple substances of which these bodies are formed do not perish,—of them there is no new creation. Their quantities and qualities remain unchanged; and hence, though the day come when the elements melt with fervent heat and the earth and all that is therein shall be burnt up, even that shall not necessarily be annihilation of matter, much less of soul. Weigh the vapor, the carbonic acid, and other gases, and the unconsumed particles of fuel that escape from yonder grate while it burns five pounds of coal, and you find that their weight, added to that of the ashes left behind, will be just equal to the weight of the fuel burned. Nothing is destroyed; old ties are broken, but new ones are formed; your fuel disappears, but it gives out a gas which falls on the leaves and roots of plants, and becomes to them the very breath of life. The living plant comes forth from the decaying consuming wood; and thus may a spiritual body come forth from the slumbering ashes of the terrestrial one, and new heavens and a new earth be formed from the elements that may remain after the conflagration of that material system in which we now dwell.

And if even matter may be immortal, what shall we say of the soul? Simple material substances, so far as chemists can discover, never perish. May not that immaterial substance within, of which we cannot conceive, except as simple and indivisible,—may that not hope for as high a destiny? Death dissolves the organism, but not one of its minutest or meanest particles does it destroy. Shall we fear, then, that it can destroy the soul? We can *see* matter bid defiance to the power of the King of Terrors; the soul we can never *see*,—least of all when it has cast off all the gross organs through which it once made itself known to us; but can we doubt that

its power of withstanding the assaults of its last and most inexorable enemy are at least as great as that of the material particles with which it has so long been clogged? When death lays the body low, its component parts have other offices to perform,—other spheres to fill; and, though you retard, nothing shall finally arrest their appointed course. And may not the soul, too, expect to enter on other scenes and engage in other employments? When we examine matter by the light of Chemistry, it seems plainly made for a round of different affinities and combinations. When we examine mind, it seems not less plainly to be made for progress,—for direct and illimitable advancement in knowledge and in virtue. Matter, we know, fulfils its end. Is it likely that mind alone shall fail of its higher and nobler destiny?

BOOK II.

ORGANIC NATURE.

PHYSIOLOGY, ZOOLOGY, GEOLOGY, AND BOTANY.

CHAPTER I.

THE LIFE-POWER WITNESSING TO THE DIVINE EXISTENCE.

WE have already endeavored to show that the fundamental principles of Physical Science, as unfolded by Mechanics and by Chemistry, illustrate the Divine Existence and perfections. We shall now attempt to perform the same office for the more central principles of Physiology and the related Sciences.

Life, then, we propose to show, wherever we meet it, whether in plant or animal, points with clearness to a great First Cause,—to a living, spiritual, and mighty Creator.

In this chapter we shall confine ourselves to certain preliminary views.

Life points to a First Cause, because here, as in the inorganic world, second causes carry our minds back from step to step till they land us in what is called a First Cause,—*i.e.* one which is not to be resolved into anything natural. Hence, though we refer the vital changes which we observe in plants and animals to chemical or mechanical actions, or to both combined, we are led, as we do so, to ask whence proceed these actions called Mechanical or Chemical? If they, too, can be resolved into some physical Cause or Law more general than themselves, still we are but advancing nearer and nearer to a point which must, of necessity, be reached at last,

and which is generally reached 'soon,—the point where all physical sequences seem to end, since we can trace them no further. Yet there is still an effect to be referred to its Cause, or a fact to be resolved into some other fact more general and comprehensive; and we must therefore consent to move forever in the same narrow circle, or we must do what reason requires us to have done at every link of the long chain of sequences we have traced,—at every fact which we have been resolving into some other fact more general. We must recognize our own ignorance and the utter insufficiency of every scientific explanation of phenomena which does not carry with it the clear recognition of this truth, that the primary object of Natural Science, in respect to events, is not to find their ultimate or efficient, but simply their proximate and general cause,—to ascertain their relation to each other, and the physical conditions under which they may be expected to recur.

Recognizing this truth, we recognize at the same time that at every step, in a series of Natural Phenomena or Vital Actions, there is something more than the natural—some power in which it rests—which made it what it is, and that this power is characterized by Intelligence and Personality. Any efficiency which can reside in second causes must be a derived and dependent efficiency,—one which not only came at first from the original of all power, but which is constantly fed and nourished from the same fountain. An Ambassador goes from his own country to represent it at a foreign court. He goes not merely to represent it, but also in some sense to enjoy and exercise there its proper sovereignty. Hence his country's flag floats over his hotel; by a fiction of Law he is supposed to have carried his country with him, and his person, effects, and servants are all privileged from arrest by any foreign authority. Yet, with all his power, what is he, separated from the Principal, whose agent he is? What would he be if his government and people were to perish? His

prerogatives and powers would be abrogated in a moment. His official responsibility and authority would expire so soon as they ceased to receive fresh accessions of efficiency from the sovereign power that first bestowed them. And so it must be with every secondary cause; so especially with every natural agent, whether in the organic or the inorganic world. Our minds instinctively revolt from the idea of attributing to such an agent any ultimate and independent efficiency of its own, in virtue of which it could exist and act, though other and higher powers in the universe were annihilated.

We call attention distinctly to this truth, because it seems to meet two errors which are prevalent. The one is, that though we admit a Creator to originate the system, we do not need Him to uphold and carry it forward. It seems to be forgotten that if it require power to originate changes, so it requires power to bring them to their completion. If in the one case we need a Creator, in the other we need a Preserver and Governor. Every successive change, whether in the physical or physiological state of bodies, is as distinct a proof of the substantial agency of Him "in whom are all things, and by whom all things consist," as was the first phenomenon that called forth the admiration of higher intelligences on that day when the morning stars sang together and all the sons of God shouted for joy.

"Science is pious," says Quinet, "when she finds everywhere a *permanent miracle*, and is thus enveloped *on all sides by revelation*." It is not only the written word that teaches that God is He in whom all things subsist; that even the fowls of the air and the lilies of the field are cared for and fed and clothed by Him; that He numbers the hairs of our head, and notes a sparrow's fall to the ground,—true Philosophy, also, sends forth from her oracles the same lesson. She proclaims, too, that it is when the Lord of All sendeth forth his winds from the cold North that our streams congeal, and the sweet influences of Pleiades are bound up; and that when He

bloweth with his South wind, the icy chains are melted and the waters again flow; that it is when He breathes into man the breath of life that man becomes a living soul; and that when he taketh away their breath, all living creatures die and return to their dust. There are second causes which operate, and operate, too, according to fixed laws. All is order, but it is the order of all-pervading and superintending mind,—not of fixed fate or of blind instinct.

Another error which would disappear if this truth were more clearly appreciated, is the idea that if the phenomena of life in individuals, or the beginning of life in a species, were once resolved into the agency of mechanical and chemical laws, we should lose most important evidence for the Creator's Existence and personality. If there be no immaterial principle of Life, nor spiritual principle of mind, what proof can we have (it may be asked) that God is a Living and Spiritual Creator, or that man is destined, soul and body, to the inheritance of another and retributory life? We answer, that however influential chemical and mechanical causes may be in originating life at first, or in transmitting it from parent to offspring, or in carrying forward its functions in each individual plant or animal, these causes themselves are to be accounted for. This wondrous power of theirs,—the power of evolving life, with its functions of spontaneous motion and ceaseless change and assimilating force, with its round of birth and growth, of decline and death,—the power of evolving such phenomena from mere matter which is essentially inert, impenetrable, and heavy,—here is a power which requires to be explained. If the existence of an immaterial principle called Life, as the proximate source of these phenomena, be strange, stranger still, beyond measure, is the fact that, from sources merely material, results so foreign to all matter should be educed; and if a God be needed to originate and sustain the one, is He not still more needed to bring about the other?

Suppose, then, that the existence and functions of the young

plant or animal might all be resolved into the properties of the parent germ from which it sprang, with coexistent physical agencies, such as light and heat, and that thus we can ascend from child to parent till we reach the beginning of the species ; and suppose we ascertain, moreover, that when those progenitors first started into existence, it was not through any supernatural power, through any direct and creative effort of the Most High, but that certain portions of matter had the mysterious property of passing from the inorganic to the organic state,—of taking to themselves some specific form of plant or animal, and going through the cycle of its vital changes ; suppose, too, that in the processes of our own bodies we can discover no fact which may not be resolved into material causes, still, these causes are but finite and dependent powers. What have they that they did not receive ? They cannot *originate* the energies with which they act, and it can be shown that those energies have not always been in play. There was a time, and it seems to have stretched itself through a mighty interval, when there was no life in the earth, though there was a great globe of matter in constant change. Whence did it happen, then, that all at once this dead matter put forth such strange power, and developed itself in such new forms ? Who gave to it not merely the power of spontaneous generation, but the power also of reproducing or propagating itself in numberless successive individuals of the same species, so that there should be occasion but once in all time for that specific form of development,—that such development should thus stand forever by itself *an isolated, solitary fact* ? Here are motions, and motions, says Aristotle, carry our minds irrepressibly to a mover, and such motions, let us add, call for a mover of creative power to originate matter,—to endue it with the mysterious power of development which, after slumbering for ages on ages, could leap forth but once to its effect, and then retire—all other things continuing as they were—into its original quiescence.

When, then, the unbeliever or the Epicurean Philosopher strives to solve all the phenomena of life by means of physical causes alone, or when, on the discovery of some new law in the chemistry of life, he leaps at once to the conclusion that, in like manner, chemistry will in time be found sufficient to solve *all* the functions of organized and living beings, let him not persuade himself that he has escaped from evidence in behalf of Religion. He has relieved himself of one problem only to have it replaced by another. There are still powers and properties to be explained, and they will be found to point, with steady finger, towards a First Cause at once personal and spiritual. Matter tells not of an Eternal and unvarying power like the soul of the world of the ancients,—a power which acts without forecast, choice, or self-consciousness. In its ultimate atoms, in its masses, and in its arrangements, it speaks of a free and personal Creator. Each one of its constituent molecules, as we have seen, has all the characteristics “of a manufactured article.” The masses which form the primary and secondary planets of the Solar System, and the collocation and arrangement of those masses, are all characterized, on the one hand, by too much of uniformity to be consistent with chance;* and, on the other hand, by too many deviations from the law of continuity† to be the result

* La Place has shown, in respect to the well-known law that the motion of *rotation* of the satellites around their primaries is equal to the motion of revolution, that there are two thousand probabilities *against*, to one in favor of, its being fortuitous or the result of chance.

† The densities of the planets do not follow any regular law, the sun being only one-fourth of that of the earth,—the densities of Venus, Earth, and Mars being nearly equal, while the density of Uranus is *greater* than that of Saturn, which is nearer the Sun. The motions of the Satellites of Uranus deviate in direction from the general rule, being from East to West; and there is not such uniformity in the relative distances of the planets and of the satellites as a law of uniformity would require. So Sir I. Newton, in a letter to Bently, states that there is no discoverable reason why the Sun, which is the centre of attraction of the Solar System, should also be the centre of its light and heat.

of mere natural law or necessity. It will be seen, hereafter, that corresponding indications of a Sovereign will—an appointing and arranging power—abound throughout the world of organized and living beings. He, then, who doubts or rejects the first truths of Religion, need not hope that he will escape all natural evidence in their behalf by taking refuge in the system of materialism; nor need he who hopes and believes in God fear, though it should be shown by the light of advancing Science that all the phenomena of life can be traced to the proximate action of physical as distinguished from hyperphysical causes.

But is this result likely? Is it probable that Science will demonstrate that what we call the vital power is only a name to denote a congeries of material changes and actions, and that Mechanics and Chemistry will be found sufficient, at last, to explain alike the origin of species and the vital organic functions of individuals? This question is worthy of consideration. It becomes us, both as friends of Science and as friends of Revelation, to inquire whether that which has been the prevailing belief of mankind for thousands of years, and which has been supposed to enjoy alike the sanction of Reason and of Scripture, is only a figment.

We begin with *the origin of species*. Geology directs its mighty telescope into the distant depths of the past, just as Astronomy, with the aid of artificial glasses, penetrates into the remoter regions of space. Geology conducts us from one to another formation, which entombs the remains of extinct races of animals and plants until, at length, it reaches a line beyond which death never penetrated, because life had never been. There it seems to stand, at the confines which separate later geological periods during which organized and living beings existed on the earth, and those earlier times when all was silent and lifeless matter. It places us where we seem to hear a fiat going forth,—“Let there be life.” Then appeared organized and living substances,—plants and animals; and

of these, class after class, from the invertebrate animals to the vertebrate, and from the vertebrate of the lower classes, such as fishes, up through reptiles and birds to mammalia and to man, who is the characteristic denizen as well as lord of the geological epoch in which we live.

Did that fiat emanate from a mere material power or from one that was Supernatural? Was this apparition of living beings on the earth the result of spontaneous generation,—of the concurrence of certain physical causes,—or was it the result of His volition, who speaks, and it is done, who commands, and it stands fast? They who advocate spontaneous generation, such as Lamarck, Maillet, Geoffroy St.-Hilaire, have their merit as physiologists, but over against their authority we can place names still more illustrious. Cuvier, the brightest light of his age in this department of Science, declared, after a laborious exploration of the fossil remains of the globe, that he could find nowhere on those petrified records any trace of a generation so curious. Such is the testimony of the latest and ablest of those who have devoted themselves to the study of Palæontology;* and their testimony seems to be conclusive, since it is next to impossible to conceive that a transition of matter, from the inorganic to the organized and living state, had it taken place spontaneously and gradually, should not have been arrested by petrifaction at all its different stages, and thus have furnished us with specimens of monstrous malformation in every species. But no such specimens have been discovered. Nothing is abnormal: "Every organic part is finished, every animal complete,—the first of his race as complete as its offspring of the present day." To the testimony of Cuvier, we may add the testimony of an eminent naturalist (Agassiz), who has adopted the United States of

* See Mr. Lyell's first four chapters in his "Principles of Geology;" De La Beche's Geological Researches, p. 239; and also Buckland, Conybeare, Sedgwick, Philips, and Owen.

North America as his home. Both in his report on the fossil fishes of the Devonian, or old Red Sandstone formation, read before the British Association for the Advancement of Science, and in his great work on Fossil Fishes, he bears distinct testimony to the supernatural origin of animals and plants. In the former of these works, he says,* "It is a truth, which I consider now as proved, that the *ensemble* of organized beings was renewed not only in the interval of the great geological divisions which we have agreed to term formations, but also at the time of the deposition of each particular *member* of all the formations." In the latter work,† after rejecting the scheme of natural development, he affirms, "It is necessary that we recur to a cause more exalted, and recognize influences more powerful, exercising over all nature an action more direct, if we would not move eternally in a vicious circle. For myself, I have the conviction that species have been created successively at distinct intervals, and that the changes which they have undergone during a geological epoch are very secondary, relating only to their fecundity and to migrations, dependent on epochal influences."

But if Geology shows that there are no traces of spontaneous generation in the distant past, Zoology and Physiology demonstrate that there are none but the slenderest tokens of its existence now. One after another case, of what was once regarded as a specimen of this equivocal generation, has disappeared before the searching scrutiny of Science, and has thus prepared us to expect that a similar fate awaits others not yet explained. Some years since, Lamarck and his associates appealed, with an air of exultation, to the smallest species of Infusoria or microscopic animals (such as monads) as examples of the "natural development of a particle to a mammal, at that point of the process where the organism

* Twelfth Report of the British Association, p. 85.

† Poissons Fossiles—towards the close.

stands between the vegetable and animal worlds. It was supposed that these little beings consisted of a homogeneous substance, that they had neither mouth nor digestive organ, and were nourished only by means of absorption through the external surface of the body. But Ehrenberg has subjected them to the action of his powerful microscope, having first supplied them with organic coloring matter as nutriment, and he finds that they are highly organized, having a mouth and organs of digestion and reproduction, and oftentimes also a muscular system.”*

Is it not likely that a similar discovery awaits on other facts, which are still relied on as supporting the theory of spontaneous generation? For instance, the *Acari Crossii*, the minute animal and plantlike forms which have been developed by Mr. Cross under the action of a powerful electric battery, is it not to be presumed that they, if real organic structures, will be brought within the ordinary law? With whatever care his apparatus is prepared, in order to exclude the presence of all ova or pre-existent germs of animalcules, those germs might still be there. The animal itself—much more its ovum—is exceedingly minute, and it may, like the flour-cel and the wheel-animalcule, be so tenacious of life that none of the means employed to extirpate it have been sufficient. Those last have been subjected for twenty-eight days to a heat of 248° Fahrenheit,—where there was no air and where they were acted upon constantly by the chloride of calcium and sulphuric acid,—and yet, after all, have been resuscitated. It deserves remark, too, that the creatures, said to be developed solely by means of physical action, start into life full grown (*conservæ* or *infusoria*), instead of appearing, according to the principles of regular and continuous progression, in their embryo state. They appear, too, when developed, to have been filled with eggs, which would seem conclusive of

* Harris's Preadamite Earth, p. 285.

the fact that they have been derived from other individuals of the same species.

If we are referred to the parasitic animals that live in the interior of other animals, as specimens of spontaneous generation, we should remember that their ova can penetrate wherever food or air can pass, and that so long as pins and needles work their way from the surface far into the interior of animal bodies, we need not wonder that the germs of beings so minute as these should be able, by some means, to accomplish a like end. We esteem ourselves justified, then, in dismissing the *Hypothesis of spontaneous generation* or natural development from among the probable causes of the first origin of the different species of plants and animals. Dismissing it, however, we have hardly an alternative but to turn to the creative energy of Him who is great in power and mighty in operation. Says Mr. Owen (perhaps the very best judge of such questions now living, and who well merits the title of the Cuvier of England and of our day), "*Of the introduction of new species, we know no natural cause, and can hardly form a conception of such.*"*

We turn to the *vital processes*, as seen in a living plant or animal. Can they be resolved into laws merely physical, into the action of chemical and mechanical causes? Such has been the opinion of some physiologists for the last three hundred years. Has the progress of Science within that time—the discoveries in physiology, inorganic chemistry, and in the anatomy of animals and men—contributed to strengthen or to weaken such physical theories of life? Is it more or less probable than it once was that life is destined to be abrogated from among the primary objects of human thought, and to take its place among those secondary principles, which can be easily resolved into the action of attraction and repulsion? Certain it is, that when one cause is sufficient to account for

* Art. Physiology, Brande's Encyclopædia.

given phenomena, it is unphilosophical to assume the existence of others. If, therefore, chemistry and mechanics are competent to the explanation of vital functions, all other solutions that presuppose principles not mechanical or chemical must be gratuitous, and therefore inadmissible.

What, then, is the fact? Take the principal *functions* of life, such as circulation and assimilation, or its principal *products*, the so-called "proximate elements," such as fibrin, albumen, and gelatine, in animal bodies, sugar, starch, resin, in vegetables. Can these be accounted for on Mechanical or Chemical Principles? We answer by appealing to facts and to the authority of some of the most eminent physiologists.

I. Mr. Owen, speaking of the *circulation of the blood in animals*, asks, What is the cause or condition of the reaction of the fibres of the hollow muscle (the heart) upon the stimulating fluid (the blood)? And again, speaking of the functions of *nutrition* and *excretion*, he asks, "How does each tissue of the body select from the currents of blood flowing through the terminal capillaries, the appropriate particles for its growth or reparation, and in return add to the blood, either directly or through the medium of lymphatic vessels, its effete particles?" "These," he says, "are questions which *Physiology has yet to resolve:*" and, therefore, we may be sure that they have not been resolved by Chemistry or Mechanical Philosophy. In other words, there is no cause or condition known either to Physics or to Physiology which can explain these phenomena. So Baussingault, one of the most eminent organic and agricultural chemists of the age, says, when speaking of the circulation of the sap in vegetables, "We are still ignorant of the cause of the ascent of liquids in vegetables, which carries them to the remotest leaves, in spite, as it were, of the laws of hydrostatics. Porosity, in the spongioles of the roots, will account for moisture being imbibed; but neither it nor any chemical modification effected by the spongioles upon

the fluid imbibed, will give the least explanation."* And to the same effect is the testimony, in respect to organic functions, of Carpenter, our latest and most popular writer on Physiology: "The conversion of chyle into blood, and of blood into fibre, the nutrition of plants, the formation of sap, and the change of sap into vegetable fibre, gum, bark, flowers, etc. cannot be resolved into physical laws." "Blood and sap, unless endowed with vital properties, would be totally inert."

II. Here, then, we have the incompetency of any purely physical or material hypothesis in respect to the nature and origin of life, distinctly proclaimed, and proclaimed by the highest human authority. But that incompetency is manifest, not merely in explaining the *functions* of life, it is equally manifest in attempting to explain the *products of vital action*. Take what are called organized substances (a plant or animal), or take their proximate elements, which are also organic, and compare them with those of inorganic substances; make the comparison by the aid of Chemistry alone: (1) In the one class (organic) you have only eighteen out of the sixty-two simple bodies known to chemistry, and of these eighteen but four play any prominent part (oxygen, hydrogen, nitrogen, and carbon). In the other class (inorganic), all the simple bodies or elements are put in requisition. (2) In organic bodies the simple bodies combine in pairs, or triads, or even in a quaternary manner; in inorganic bodies they combine, in the first instance, only on the binary principle,—that is, in pairs. (3) The combination of these elements does not follow the arithmetical ratio in organic, as it always does in inorganic, bodies. (4) Organic compounds are unstable, evincing a much greater tendency to decomposition than inorganic substances. (5) When decomposed by analysis, organic bodies cannot be regenerated by synthesis, as inorganic ones can. (6) The

* Boussingault's *Rural Economy*.

manner in which organic products are elaborated is one which, to use the language of an eminent philosopher, "we do not understand, and cannot imitate." Here, then, are six marked peculiarities in organic substances which are perfectly inexplicable and anomalous, if those substances are acted upon only by physical forces.

And so with the *mechanical* properties of organized tissues. While living a muscle supports a greater weight, or is capable of bearing much greater tension, than when dead. The parts of the living frame (*e.g.* joints), by moving on each other, do not suffer a loss of matter through attrition or friction, as is the case with the parts of a machine. On the contrary, a joint kept duly in motion is both larger and more healthy than when left to entire rest or inaction. Who can reflect on facts like these, which might be multiplied to almost any extent, and yet not conclude that there is about the functions and products of organized and living beings something hyperphysical,—that which is higher than mere matter; some power pre-existent to the organs, since it builds them up, and is, in fact, the organizing principle; something which must be more than chemical, since it combines elements in a manner which puts mere chemistry at defiance,—which must be more than mechanical, since it often works as the antagonist of mechanical forces; a power which co-operates with material properties, but as their master, not their servant,—co-operates with physical laws, but at the same time subordinates, directs, and, at times, nullifies them; a power which, in short, is more than matter and less than mind? We say *less* than mind, because there is often life where there is no mind, as in vegetables; and again, because in the germs of animals there is life, but no brain; and where there is no brain mind is not found.

III. The same conclusion is forced upon us, when we contrast *inorganic and organic substances*, in respect to their obvious characteristics. We say *contrast*, for any attempt at

comparison will show that the points of difference are more numerous than the points of resemblance. Take, for instance, a mineral and a plant, and that the comparison may give every advantage to the former, let that mineral be crystalline, having, like flowers and plants, a symmetrical form. In what particular are they alike? Both are composed of matter; but in the mineral the particles are aggregated or combined chemically, in the plant they are assimilated. If addition is made to the mineral, it is made at the exterior surface; if to the plant, it is by being absorbed into the interior, and there transformed and vitalized. The constituent particles of the crystal remain at rest, those of the plant are in almost ceaseless motion, so that a living organized being is represented by Cuvier as a whirlpool. The crystal had its immediate origin in certain mechanical and chemical properties of matter,—the plant had its immediate origin in the subjective energy of its parent germ, excited to action by favoring external causes. The one owes its existence to external agents, and through them alone can perish. The other has an internal principle of life, in virtue of which it must grow spontaneously, attain maturity, spontaneously decline, and die. The crystal has but few relations to other bodies and substances. The plant is most intimately related to light, to air, to moisture, to the soil on which it grows, and to the vicissitudes of the seasons. In the one we can see the results of physical forces, and of them alone; in the other we can see that the whole life of plants "consists of a conflict between chemical forces and the vital powers. In the normal state of an organized body these are in equilibrium. Every mechanical or chemical agency which disturbs this equilibrium is a cause of disease. Disease occurs when the resistance offered by the vital force is weaker than the acting cause of disturbance. Death is that condition in which chemical or mechanical powers gain the ascendancy and all resistance on the part of the vital force ceases."*

* Liebig.

Are we not warranted, then, in concluding that Life is hyperphysical? As electricity, magnetism, and light are subtle agents, which can pass from one body to another, and are not inseparable properties of any material particle, so here is an agent still more subtle, which in its operation employs light and electricity, and is modified by them, but is still independent of both, and often paramount. On the other hand, we are not to suppose that the cause of these phenomena is physical or mental, since they are observed in vegetables, in a segment of a polyp, and are present in every living germ. It is *an immaterial and essentially living power*, having no inherent and independent efficiency of its own, but referring us for all its efficiency to a Self-Subsisting First Cause. As immaterial, it indicates that its parent cause may not be less,—as living, it proclaims that its origin is from a living and conscious Creator,—as ever active, by night and by day, it points to that Creator as one who fainteth not, neither is weary.

And this conclusion, be it remembered, in respect to the Divine Character, would be hardly less strong, though we should admit that Life is but the resultant effect of certain chemical and mechanical causes, for none but a spiritual and ever-living Creator could evolve, through successive years and ages, immaterial and hyperphysical effects from physical causes. Indeed, our consciousness, as well as our experience, constrain us to look for the primary cause and ultimate ground of all regular and orderly changes, such as those which prevail in organized beings, to the free volition of a self-existent and immaterial mind.

“ Our hearts are awed within us when we think
Of the great miracle that still goes on.
In silence round us,—the perpetual work
Of his creation, finished, yet renewed
Forever. Written on his works we read
The lesson of his own Eternity.
Lo, all grow old and die! but see again

How on the faltering footsteps of decay
Youth passes—ever gay and beautiful youth—
In all its beautiful forms.

Life mocks the idle hate
Of his arch-enemy, Death.

That delicate forest flower,
With scented breath and look so like a smile,
Seems, as it issues from the shapeless mould,
An emanation of the indwelling Life,
A visible token of the upholding Love,
That are the soul of this wide universe.”

CHAPTER II.

THE LIFE-POWER IN NATURE ILLUSTRATIVE OF DIVINE POWER.

IT was the object of the last chapter to show how *Life*, as manifested in organized bodies (plants and animals), indicates a *Great First Cause*.

We proceed now to set forth, in the light of General Physiology, the perfections of the Creator,—and I. *His Power*. When we would unfold the greatness of the Creator's Power, we usually resort to Astronomy. We go to the vast spaces which He has peopled with planetary and central orbs. We ascend in thought from system to system, stretching one above and beyond another, until we gain a point so distant that the interval seems to confound our conceptions; and then we think of the mighty masses which He has thus poised on empty nothing,—of those suns and systems, ever occupying their appointed places, and wheeling their courses, unshaken, through the void immense. And these, doubtless, are sublime and impressive views; but we are by no means sure that the operations of Life do not afford views quite as impressive; and even if they be deemed less impressive, we are strongly inclined to think that they will prove to be even more in keeping with the true character of God and more propitious to our best welfare.

It should never be forgotten that the Power of God is something more than mere force,—mere physical potency. The Creator and Upholder of all things is not merely a great Mechanician or Engineer,—a Being whose highest power is manifested in feats of more than Herculean or gigantic strength, in uprearing vast masses of matter or overcoming

great physical resistance. God is a Spirit,—an intelligent, forecasting, moral Being, who deals not only with matter, but with mind, and who aims to render both significant of glory and beauty, and both subservient to our good. The power of such a Being is evinced in overcoming mental and moral, as well as physical, difficulties; in the multitudinous objects and relations which he keeps ever in view; in the complicated and various creations of his mind and will; in the dignity of the results attained. Is there not power displayed in organizing a living, breathing, sentient being, though it be as small as the smallest animalcule,—a being who has matter and matter perfectly arranged and disposed, but who has also something higher than matter; who has life, and perhaps feeling; who is endowed with an inward, subjective power, which organizes its constituent particles, transforms them from dead matter to living substance and carries them forward in a round of changes more complicated and more curious than any which transpire in the observed motions of the heavens?

In conceiving of God we should beware of views too *anthropomorphical*,—views that liken Him too much to frail and finite man. Because *we* can take in greater spaces with our eye more quickly and readily than exceedingly small ones, it by no means follows that such is the case with God. Because to us it would be difficult to raise great weights, or project them far into space, or impress upon them any perpetual motion, is it therefore difficult to One who is almighty? Because our minds stagger and are confounded when we think of the immeasurable distance of some of the fixed stars and of the Hosts—countless to us—which He has marshalled in the sky, “calling them all by their names,” is it thus with Him whose greatness is unsearchable, whose power is past finding out? To a Being truly Infinite, boundless in his presence, and in his pervading energy, great and small, heavy and light can be of no account in acting. As with Him, a thousand years are as one day, and one day as a thousand

years,—so with Him, a thousand miles, a thousand leagues, a thousand millions of miles must be as one mile, as one foot, as one inch, as one-tenth, or one-thousandth of an inch,—that is, it must be as easy for such a Being to work within the compass of one of these spaces as of the other, and as easy for Him to employ and unfold there all his Omnipotence. *Deum sempiternum*, said Linnæus, when he had been studying the wonders of microscopic life. *Deum sempiternum et omniscium et omnipotentem a tergo transientem vidi et ob-stupui.* It is the language of high philosophy as well as of lowly piety. No being so small that he is not a mirror large enough to reflect the wisdom and power of Him that made it. No space so vast that it cannot be filled, and more than filled, with the immensity of the Creator's handiwork.

But if, in our conceptions of God, we are too much disposed to liken Him to men, by limiting and circumscribing his Power, we are sometimes prone to degrade Him even below man, to employ principles, in estimating his character or works, which we should refuse to apply to man, whose strength is weakness, and who hasteneth to decay. Conceptions which were borrowed from man and transferred to God in the infancy of society, when physical strength and prowess constituted the highest distinction, such conceptions often remain attached to the Divine Character after we have withdrawn them from his erring creatures. How is it when we look at our fellow-men, especially at those who occupy the high places of the world? Do we measure their power by the masses they can lift, or the distance through which they can project them? Take him who in some respects makes the nearest approach to creative efforts, and who is therefore called the Poet or Maker. Do we estimate his Power by the length of the Epic Poem he writes, or by the extent of territory over which he carries us in imagination? Or the Painter, do we admire his Power in proportion to the square feet of canvas which he has contrived to cover? Or

the great Sculptor, who can make the marble breathe, and embody tales of heart-thrilling interest, do we appreciate him by the number of cubic yards of stone which he has hewn into shape? When he takes a shapeless mass, and proposes to extract from it the speaking form, he employs a coarser hand and a stronger arm to cleave off the superfluous material. His own power and mastery is to be employed in drawing the finer lines, in rounding and delineating a muscle, in developing and elaborating a vein or artery. Think not, then, that we do justice to God when we represent Him as delighting most in vast distances, or in attaining to merely huge or ponderous results. Within the compass of a dew-drop, where we find millions of living and rejoicing beings, God may have displayed a power which the astronomer cannot find, with his far-reaching tube, in all the heavens; for nowhere there, with telescope of mightiest range, has he yet discovered one living being,—one being organized and endowed with the mysterious and wonder-working power of life,—one being that is born and lives, and desires and fears, pursues and is pursued, and at length dies, thus enacting a history of deeper and more incomprehensible interest than was ever celebrated by the music of the spheres.

Says an able writer, “*Science is Christian when, in the infinitely small, she discerns as many mysteries, as many abysses, as much power as in the infinitely great.*” The remark is just. Christianity is a religion of condescension. It minds not high things. When Christ came to earth He courted not the society of the great or powerful. Meek and lowly, his delight was to bend his ear to the prayer of the poor destitute. He carried the lambs in his arms. He taught that, if men would become great, even the greatest in his Kingdom, they must become as little children. He taught that there is more joy in heaven, among its angels, over one sinner repenting, than over ninety and nine just persons that need no repentance. And when we turn to microscopic life,—to beings so amazingly

minute that it requires glasses magnifying forty thousand times to bring them into view, where we find many of them highly organized, with complicated structures and manifold functions, and remember that each of these tiny beings came from the Creator's hand, and is upheld by his Power, and fulfils beneath his Providential eye its appointed office in the system of the universe, we read therein God's care for the lowly,—assurance that redemption is no strange fact. These little and dependent beings seem to come before us as types of Him who, though He was rich, yet for our sakes became poor; of Him who, though He thought it not robbery to be equal with God, yet willingly humbled Himself and took on Him a servant's form, and became obedient to a worse than servant's death, that man might live. Does the scoffer sneer at the thought that the God of Immensity, whom the Heaven of Heavens cannot contain; who rules over myriads on myriads of worlds which He has framed and on which He has planted, perhaps, a boundless multitude of his creatures,—does he stumble at the doctrine of Christ and Him crucified,—at the idea that such a Being could turn aside from his teeming worlds and their busy population to concentrate his regards upon a planet so insignificant as this; and not only to regard it, but to love it with a surpassing love,—such love that He gave his only begotten Son, that they who believe in Him should not perish, but have everlasting life? Let him study the frame of yonder animalcule. It shall rebuke this unbelieving spirit. It shall proclaim the true character of Him with whom we have to do. He despises not the day or place of small things; for the High and Lofty One, though He inhabiteth eternity, dwells in the high and holy place *with him also that is of a contrite and humble spirit*, to revive the spirit of the humble and to revive the heart of the contrite ones.

There is another moral and religious use of Life as manifested in its minutest forms. It shuts us up towards a more *spiritual* tone of thinking,—towards faith in the *invisible* and

supersensual. In respect to whatever lies beyond the cognizance of sense, we are prone now to skepticism, now to superstition. Let us descend, by the aid of the microscope, to one and another rank of organized beings, receding farther and farther from magnitudes visible to our eyes, or appreciable by our intellects, and at every step the partition wall between the material and the immaterial seems to grow thinner. We are thus prepared for transition to a world where matter is not, and where spirit-forms, imperceptible to mortal sense, throng about us. Time was when all the countless multitudes of microscopic forms that now animate the waters and float on every breeze, were to man as though they had no being. They were working for him in many ways: supplying food for the fish on which he fed;* purifying, as well as animating the water he drank; removing from the air he breathed the taint, perhaps, of many a pestilence. Other forms there were, perchance, which, penetrating to his lungs or viscera, became the sources of disease and death. Here, then, were innumerable ministers of good or ill about him wherever he went, ever busy for his weal or woe, of whom for ages he knew not, thought not,—of whom he thinks but little now, because they do not press upon his grosser senses. Should not this fact suggest to us how much like truth are the revelations of Scripture in respect to the good and bad angels that are represented as abroad among men,—the legions of spirits that fly as God's ministers of mercy to his heirs of salvation, or as the devil's emissaries in the work of death to souls?

“Think not, though man were not,
That Heaven would want spectators, God want praise;
Millions of spiritual beings walk the earth
Unseen, both when we wake and when we sleep.”

* “The common scallops, as well as other mollusks, often contain thousands of shells, which, being siliceous, have resisted the process of digestion. A glass slide, mounted with a few particles of the undigested contents of the stomach of a scallop, presents an assemblage of infusorial shells, apparently identical with those forming the Richmond earth.”—*Mantell on Animalcules*, p. 103.

With these remarks we are prepared to trace the indications of DIVINE POWER which can be discerned in the constitution and phenomena of living creatures. Power reveals itself through—1. *The multiplicity of its creations.* 2. *Through the principles on which its works are constructed.* 3. *Through their power to outlive the vicissitudes of time, and to withstand the various causes of decay.* 4. In the case of a being who exerts physical as well as spiritual strength, we should measure his *power* by the *mechanical, chemical, and other forces* which he subjugates and employs. These are the tests by which we should try the productions of a great author or a great artist, or the achievements of a great general, statesman, mechanician, or philanthropist. The second of them being the *principle* on which living beings are constituted, we shall postpone until we come to consider the *Wisdom* of the Creator, so that the remainder of this chapter will be occupied with considering—1. *The multiplicity of living creatures as so many signs of their Creator's power.* 2. *Their power to outlive changes and withstand the assaults of physical foes.* 3. *The intensity of their physical energies.*

1. *The multiplicity of living creatures* (animal and vegetable).—We shall gain a clearer conception of the Power manifested through this multiplicity if we consider—(a) *creatures now alive*; (b) *those that might now live*; and (c) *those that have lived*.

(a) *The multiplicity of animals and vegetables now alive.* It may seem presumptuous and absurd to attempt any sketch of this. A few illustrations only we shall venture upon, and with a deep sense of their feebleness and insufficiency. Of all the different and independent species of plants and animals now living, no attempt has been made to number the component individuals of any one of them, except the species man. In civilized countries, a careful census is, from time to time, taken of the inhabitants; in countries imperfectly civilized, and in barbarous lands, estimates more or less careful and

correct have been made, and the result is the conclusion that the whole number of human beings on the globe does not differ essentially from one thousand million. This number is easily enunciated; it is easily obtained by the addition of its parts; but how hardly is it apprehended by the mind with clearness and distinctness! One hundred thousand—the number of inhabitants in the city (Boston) where we write—is a great number. Were they all abroad in the neighboring fields,—spread out upon a mountain-side, ranged in regular files, and ranks,—what a mighty host would they appear! Yet, if we separate the individuals in succession from the rest of that host, they would, one by one, only serve to represent the various *species of plants* now known to Botanists. According to De Candolle, the number of living species is from one hundred and ten thousand to one hundred and twenty thousand, and in each one of these species, whether annual or perennial, the individuals must be numberless.

Again, if we increase tenfold this hundred thousand, so that we get a million, the individuals of this million will barely represent as many *different and independent species of animals*, aquatic and terrestrial, which exist on the globe, over and above microscopic animalcules. But who shall attempt the census of any one of these species? It has been computed that there are fifteen millions of buffaloes still roaming over the Western Prairies of North America, a number almost equal to the human population of England; and yet they are but the remnant spared by the unrelenting progress of civilized man, and the incessant warfare waged against them alike by the red and white huntsman. What are buffaloes, however, to the number of many inferior quadrupeds which swarm everywhere,—such, for instance, as those pests of our houses, barns, and fields,—mice and rats? Mr. Lyell* supposes that all existing mammalia, whether living on land

* *Principles of Geology*, vol. iii. p. 91.

or water,—*i.e.* all animals that suckle their young,—constitute less than one-thousandth part of the whole number of all classes. His conjectures would have been, perhaps, nearer the truth if he had said one-ten-thousandth part; for it is worthy of remark that as we descend in the animal kingdom, from those of greater to those of smaller size, the species generally grow more prolific, and the numbers alive at any time increase, so that numbers supply the place of strength. According to Walch, a single species even of the smallest insect can commit, when required, more ravages than the elephant. Clouds of such insects, of different kinds,—some so minute that we can hardly see an individual,—often form bands, which a man could no more number than he could number the sands on the seashore, and which lay waste the fields of the husbandman in a manner the most fearful.

If from dry land we go to the waters, fresh and salt, we find them swarming everywhere with living forms. “The great and wide sea, also, wherin are things creeping innumerable, both small and great beasts.” This description from the Sacred Volume is true to the letter. Fish are found much below the depth of a thousand feet. They occupy a surface more than twice as great as that occupied by terrestrial animals. We know, too, that the bottom of the sea, to immense depths, its rocks and reefs, its tide-washed shores, are everywhere covered with molluscos, crustaceous, and testaceous animals,—with corals, sponges, and echini.

And if we pass into the region of microscopic life, which is just now being explored with great enthusiasm, what varieties of forms, what inconceivable numbers, break upon our view! The spray that flashes at night with phosphoric brilliancy before the prows of our vessels at sea, owes its luminous coruscations to myriads of animalcules—the ocean firefly—that people every drop of sea-water. In the tropics, for leagues the ocean seems of a red, rosy hue, owing to the presence of other infusoria. In polar regions a red dust has been found

sprinkled for considerable distances over the surface of snow-fields, all made up of microscopic animals. The polyp alone is supposed by naturalists to be stronger in individuals, than insects which contain one hundred thousand different species, and each species equal, perhaps, to the human population of the globe a million of times told. You have but to take up anywhere one or two drops of water, and you find it peopled, not only with many different individuals, but with many separate species. It is computed that eighty millions of these animalcules could live in a single drop of water, and yet each of these myriads came forth from the hand of God. He hath set members in their bodies as it hath pleased Him. They all wait on Him, and He giveth them their meat in due season.

(b) Yet these are but parts of his ways. We get a most inadequate conception of Divine power as manifested in the multiplication of living creatures, if we do not look beyond *the actual to the potential energy of the vital force*,—beyond the multiplication which it does occasion to that which it might occasion under other circumstances; or, in other words, to know what God can do through the agency of life, we must consider not only the beings that do live, but those that might live. A great Botanist, Mirbel,* when speaking of the desolation of winter, as if life were extinct, says, "Such is the prodigal fertility of nature that a surface one thousand times the extent of our whole globe would not suffice for the seed-harvest of a single year, provided the whole was suffered to reappear." This estimate will hardly be thought extravagant, if we consider for a moment the almost boundless fecundity of vegetable life. One thistle produces sixteen thousand seeds, and one poppy-seed has been known to produce thirty-two thousand seeds; and these are not among the most prolific. Of the seeds that disappear, many perish, doubtless, in the

* See paper by him in Brande's Journal, vol. iv.

severity of winter ; many are consumed by animals, and many become buried in the earth, where they lie dormant till favoring physical circumstances shall rouse their energies. To whatever depth we excavate the earth for wells or houses, the soil thrown up is generally charged with living seeds, which soon germinate and start forth into vigorous plants. That the earth is thus teeming with the vital power of vegetable germs, ready to burst forth and equal to the exertion (if it were all liberated suddenly and simultaneously) of volcanic force, will be apparent to any who has noticed with what difficulty the gardener or husbandman keeps down the weeds which spring spontaneously from seed of Nature's planting, and which, but for the warfare he wages, would soon stifle all his hopes of harvest. Indeed, much of the agency of the husbandman consists in substituting one form of life for another, and often its less prolific forms for those more prolific. And then consider what destruction there is of the seed that man raises by laborious effort. In the cereal plants, for example, which include all our grains as well as grasses, but a small proportion of the seed-harvest of any year is allowed to return to the earth. The reaper is careful to put in his sickle before the time has come for the seed to fall. That seed gives to the grasses their principal value as food for cattle, and to the grains their only value as food for man. What forms the staff of life to nine-tenths of the human family, but the surplus seed of annual plants remaining over and above what is needed to replace the harvest of the preceding year ?

As with plants, so with animals ; the fecundity of many species is marvellous. One flesh-fly will produce twenty thousand at a birth. One house-fly will give birth to twenty million in the course of a year. Of the aphides, or plant-lice, one will (according to Reaumur), in five generations, become the progenitor of nearly six billions of descendants ; and it is supposed that in one year there may be twenty generations. The roe of the cod and the flounder has been found to contain, in

some instances, more than a million ova. We are not, then, to wonder at the desolations which have been effected by the combined agency of the most insignificant insects. The aphides have, on two separate occasions, destroyed the hop crop of Great Britain. We all know how the locust has converted fruitful fields into a desert waste; and every year we hear of the ravages which the weavel, or some other insect, has committed on the fruits of the earth, causing man—its lord—to tremble in fear of famine. "Is any plant or animal likely," says Lyell, "to monopolize a place or dead body to taint the air, a scanty number of minute individuals (insects), only to be detected by a careful research, are ready (such is the power of suddenly multiplying their numbers) to give birth to myriads, which will operate as quick destroyers. But no sooner has the destroying commission been executed than the gigantic power becomes dormant; each of the mighty host soon reaches the term of its transient existence, and the season arrives when the whole species passes naturally into the egg, and thence into the larva or pupa state. In this defenceless condition it may be destroyed either by the elements or by the augmentation of some of its numerous foes, or the following year may be unfavorable to hatching the egg or developing the pupæ." Is it not well that He who holds the waters in the hollow of his hand and the winds in his fist, holds sway, too, over this fearful potential energy of life, and that, having been appointed by Him to its rightful office, it is bidden now to be quiescent,—now to burst forth with resistless power?

(c) Even life, thus viewed, in its *actual and potential* manifestations *combined*, forms but a part of God's ways in this department of his creation. To these we must add the manifestations of *extinct* or *fossil* life,—*the life that has been*. When we examine the crust of the earth, we find that a large portion of its rocks and mineral formations is composed of forms once living but now entombed. Coal-fields underlie large

portions of the United States,—rising in some cases into mountain-chains, which are made up almost entirely of the remains of vegetables. In Europe, there are coal-fields in which one hundred and twenty seams of coal lie one over another, exclusive of a host of smaller seams, and some of these single seams of coal are thirty, and others more than fifty, feet thick. It is worthy of remark, too, that these “coal measures are indebted for no inconsiderable part of their materials not to the trunks of mighty trees, but to small grasses and frondiferous and low cryptogamic vegetables.”*

Consider also the *animal* remains which are piled up to the depth often of many thousand feet. To represent the globe as a mighty sepulchre is not poetry, but simple history. There rest in its bosom not buried individuals only, but buried races. Even as low as the Silurian formations, the extinct species lie entombed by hundreds, in the oolite by thousands, and in the tertiary by thousands on thousands,—beings mostly different from any now existing, which have passed, race after race, to the catacombs of nature. Of the aggregate of life which has teemed over the globe in past geological epochs, we can, of course, know nothing precisely; but a few facts like these, which I proceed to state, may aid us in forming some vague conception. Great masses of rock and mineral are composed entirely of the preserved or petrified *shields of animalcules of extreme minuteness*. Bog-iron ore, for example, is composed of the ferruginous shields of one species; the Bilin polishing slate of Prussia (some fourteen feet in thickness) is composed of the siliceous shields of another species, so small that forty-one billions are contained in a cubic inch; the cities of Richmond and Petersburg, in Virginia, stand on an extensive formation, several yards in thickness, and made up of various kinds of marine infusoria; while “the mountain limestone, about a thousand feet thick, and often many miles

in length and breadth, consists of nothing else than the remains of coralline and testaceous forms, compressed into hard masses."

2. But from the *energy of Life*, as manifested in the multiplication of living or extinct organisms, let us turn to the energy which it displays in *withstanding and subduing opposing forces*. Deprive an individual plant or animal of life, and how quickly does it decay and putrefy; its constituent elements hastening to abandon the state of unstable equilibrium in which they have been imprisoned, and returning to chemical conditions congenial to their physical properties! Life is the power which has thus mastered them, and bound them temporarily, as it were, in chains. So long as the vital principle animates the organism, it can overpower some of the strongest affinities and some of the most refractory substances in nature. It solidifies gases. It digests limestone and flints. It brings together from earth, air, and water the most heterogeneous and inflexible elements, and transmutes them into its own living substance,—in plants, transforming all into sap, and from that sap assimilating some into fibre, some into gum, some into resin, some into oil, some into sugar, some into bark; in animals, digesting every kind of food into blood, and from it extracting bone for one part, muscular fibre for another, nervous matter for another, gelatinous matter for another, albuminous for another.

Consider, too, the *hostile physical powers*, in spite of which life maintains itself. There is hardly a limit, a barrier, which men have been accustomed to set to the onward and triumphant march of vital power, which it does not pass. It is so with the limit of cold, of heat, of light, of moisture, of sterility. It was once thought that plants could not grow, at least could acquire no color, without light; yet at the depth of more than one thousand feet below the surface of the sea, where the darkness must be as dense as midnight, plants not only grow, forests not only wave, but they acquire a vivid green

hue; and nine hundred species of intestinal animals live in the interior of other animals. It was once supposed that animal life could hardly be maintained by natural means beyond certain lines of latitude; yet, in the neighborhood of either pole, "far beyond where larger animals have ceased to exist, and in the residuum of melted ice which floats as high as lat. $78^{\circ} 10'$, new varieties of invisibly minute microscopic animals have been found,"* not only alive, but contending successfully with the intense cold. In our own winters, though life in trees seems extinct, it is still there, as the returning resurrection of springtime testifies; and even when it seems most dormant in midwinter, "new fibres are forming at the roots, a slight progression of sap is going on, and a trifling enlargement of the buds is taking place." It was once believed by all that no living organism could long exist in a heat above 150° F., or when wholly deprived of moisture; and yet the *acari* live in boiling water as well as in scathing alcohol; and the *rotifer*, or wheel animalcule, whose element is water and air, has been revived, as observed before, after having been dried for twenty-eight days *in vacuo* and subjected to a heat of 248° F., mixed with oil of vitriol. On the quartz rock, which not even the mechanical and chemical action of the elements can dissolve without the greatest difficulty, the spore of the lichen fastens itself, takes root, grows, and gradually breaks up the solid mass. Seeds have germinated that were taken from an Egyptian mummy nearly four thousand years old, and from the stomach of a man buried under a Roman barrow nearly two thousand years ago; and cases are on record where germination has started up from seeds that must have been planted (it would seem) before man was an inhabitant of our Earth.† In some species even the developed plant seems to be endowed with an almost deathless vitality. The cedars of Lebanon have been standing for three thousand

* Humboldt's *Cosmos*.

† Carpenter's *Physiology*.

years ; and the traveller of our day is allowed, perhaps, to gaze on some of the very plants which were observed and studied by him who spake of " trees from the cedar-tree that is in Lebanon, even unto the hyssop that springeth out of the wall." In South America there are trees, such as the baobab, which are supposed to have attained the age of five thousand years, and to have stood unharmed amidst the war of elements, while kingdoms have risen, and ruled, and perished, and unnumbered generations of the mighty men of war have gone the way of all the earth. Even where the individual dies, and dies soon, he does not do it without detaching from his body a portion of himself, endowed with the germ of another like individual, perhaps of many such ; so that, though he disappear, he leaves behind him an unbroken stream of vital power, which flows on with a might which no natural causes can withstand. All our living species are not less than six thousand years old. It is doubtful whether one of those that lived when the great Progenitor of the human race was created, has perished. It is thought that many now living must have lived through all preceding geological epochs, back even to the time when animal life first appeared on the earth, and when species, whose fossil remains lie entombed beneath us, became extinct. " Their death," says Owen, " seems to have been a violent, rather than a natural, one ; thus intimating that as it required a God to create, so does it require a God to destroy a living species." " We have," he adds, " no experience of the extinction of a species by a gradual abrogation of the procreative powers in the individuals of successive generations."

3. A third criterion by which we may estimate *the power of the Creator, as set forth through life*, or vital processes, is a physical one. We will confine our illustrations here to the mechanical power of Life, to what may be called Vital Dynamics.

1. Consider the mechanical power exerted by *the vital prin-*

ciple in Plants. It has been ascertained by careful experiment that the force with which sap ascends in the trunk of a pear-tree is sufficient to balace a column of mercury thirty-eight inches in height. The pressure of the atmosphere can balance a column of mercury twenty-eight to thirty inches in height, so that the upward pressure of sap is nearly one-fourth greater than the upward pressure of the atmosphere. But what weights may not be supported by this last force, which is equivalent to a pressure of about fifteen pounds to the square inch! It raises, for example, and keeps suspended in mid-air, all the clouds which curtain this our earthly habitation, and from which our rain descends. It has been computed by philosophers that were the clouds which are thus raised, silently and without disturbance each year, required to be raised by human strength, it would tax the efforts of all the human race for a period of two hundred thousand years. Extravagant as this estimate may appear at first sight, it will appear less so if we consider that the rain discharged annually from these clouds (which represents of course an equivalent weight) falls over the whole globe to an average depth of thirty inches; so that a hollow sphere of the diameter of the earth, and thirty inches in thickness of the specific gravity of water, would be the weight to be raised and held suspended in the air at the usual height of clouds. It required one hundred thousand men twenty years (aided doubtless by machinery) to build the great pyramid of Egypt. But what were the masses thus raised to those which we find raised by the vital energies of the ascending sap and the absorbing, digesting leaf! Every forest is a forest of Nature's pyramids. Not only the mighty masses that stand from year to year, and from age to age, but the leaves and branches and annual plants that have fallen, all must be embraced when we would reckon the mechanical effects produced.

Take annual plants alone. Look at the earth at the opening of Spring; when all is yet a waste, innumerable seeds,

some deposited by man, some by nature, slumber beneath the clods. They soon begin to shoot forth their plumules, and, as they do it, what immense masses of earth are silently uplifted (with an all but resistless power)! The Corinthian capital (it is said) is but a transcript of an acanthus forcing its way up and around a weight which had been laid upon it. Hardly any soil is so impervious but the tender shoot will force its way towards the light and heat. In a few months what teeming abundance, what matted masses of vegetable matter, are found waving over the fields and through the wildernesses lately so sterile! The ships of commerce, which are ploughing every sea and thronging every port, find a large portion of their freight in the *seeds and seed-vessels which are the growth of a single season*, and these, be it remembered, are the least cumbrous and weighty parts of the plants from which they are taken; and those plants again form a most insignificant fraction, when compared with the masses of spontaneous vegetation which, during the same period, have been reared on high and sustained in spite of gravity.

2. From vegetable turn to *Animal Mechanics*,* and, 1st, to *the force exerted by the involuntary or vital organs*. Take, for example, the human heart. It contracts with a force of six pounds to the square inch, which is ten by six for the whole interior surface, or a force equivalent to sixty pounds in weight. These contractions are repeated four thousand times in an hour, or nearly one hundred thousand times in a day. Multiply one hundred thousand pounds by sixty, and you get a force of six millions of pounds for the mechanical force exerted by these pulsitating hearts of ours in every twenty-four hours. In other words, if all these separate contractile efforts could be condensed into one mechanical effort, it would be sufficient

* The coral reefs, from three to seven hundred miles in length, are formed by animals who are thus reversing the effect produced by the degradation of mountains.

to lift from the earth a mass of rock equal to six millions of pounds.

If this *heart-work* of one individual be multiplied by the number of inhabitants on the whole globe, we then get an aggregate of six thousand billions of pounds to represent the *diurnal heart-work* of the human family. And the heart is but one of many organs in man, and man is but one of nearly a million—nay, of more than a million—of species of animals. To the involuntary and never-ceasing motion of animals, too, we must add their voluntary and intermittent motions. Busy insects, ever on the wing during their waking hours; fishes, ever in quest of prey or escaping from hungry pursuers, or rioting in sport; birds, reptiles, quadrupeds, all seeking food, shelter, and enjoyment; man, ever active, never satisfied,—man that goeth to his work and to his labor until the evening,—here is an *aggregate of Dynamic Power put forth by Life*, between every rising and every setting sun, which may well lead our thoughts towards Him who is the Author and Upholder of it.

3. And look, in conclusion, at the mechanical power put forth by the *extinct life of vegetables*. Look at that great instrument of modern civilization,—the Steam-Engine,—everywhere at work, and wonder-working everywhere. It is in the mill and in the factory; on the highway and at sea; at the bottom of deep mines and on the heights of mountains. It excavates ore; it helps to purify and prepare it for use; it bears it to the artisan; it beats, and rolls, and presses, and draws it. It spins yarn; it weaves cloth; it prints books; it bears them, and all other fabrics, over the land and over the great ocean with the velocity of a bird. It transports letters, persons, and products, bringing distant places near, bridging over half the sea, and achieving, in short, changes as rapid as they are great. Now, what is the moving-power here? What gives to this instrument its amazing value and efficiency? Has it ever occurred to us that *it is the Power of Life?*

CHAPTER III.

THE LIFE-POWER A WITNESS FOR DIVINE WISDOM.

HAVING attempted in the last chapter some sketches of the Creator's *Power* as manifested in the multiplicity of living creatures,—in their power of withstanding the causes that tend to decay and dissolution, and in the *mechanical* and *chemical forces* which Life exerts in building up plants and in maintaining the functions, voluntary and involuntary, of animals,—we proceed in this chapter to present some views of the *Creator's Wisdom as indicated in the Laws of Life.*

Life has its Laws. It is not only a *mighty* power, it is also a law-abiding and a law-upholding power. This fact meets us whenever we look at plants or animals. We cannot meet with an individual specimen that we do not expect to find it characterized by certain marks, conformed to a certain type or model; the notion of which has been suggested to us by our previous experience. This expectation embraces both the *structure* and the *functions* of the organized being. In respect to each of these, we expect to find it regulated by a certain rule which represents what is called its *normal* state; and by the application of which we at once determine whether it be conformable or non-conformable as to structure, healthy or diseased as to functions. Here, then, is a distinction among living and organized beings which is unknown in the inorganic world. We never think of speaking of a stone as being in the normal or the abnormal state. In their physical properties unorganized bodies never depart from their natural type, so that there can be in physical science no department "which holds the

place of therapeutics in physiology."* It is only among living bodies that we are met by the notion of *disease*, and this because we have in respect to them a previous notion of some rule to be observed or idea to be worked out by means of a subjective power in the plant or animal itself,—working from within, not acting from without; a power, however, which does not work by its own sagacity, but by the sagacity of some higher agency, which superintends and directs it. It is midway between a machine, where both the power and the intelligence that direct it are from without, and a man whose voluntary actions are predetermined by his own will, as well as, in one sense, performed by his own power.

In the existence, then, of *this type* to be observed or this plan to be worked out, we have proof that living creatures are the work of an intelligent first cause, who, in constituting each species, whether of plant or animal, has proposed to Himself some idea or end to be attained. Now, the degree of wisdom which may be predicated of this FIRST CAUSE, can be inferred from the character of the Laws He has established for the *government of Life*.

1. Are these laws of Life indicative of a settled, *constant* purpose,—one which is maintained alike without caprice and without stubbornness,—a purpose which, on the one hand, does not change to suit every change of circumstances, nor, on the other hand, maintain itself with inflexible and undistinguishing tenacity like the Laws of the Medes and Persians?

2. Are they indicative of an *affluent, exuberant wisdom* which abounds in diversified displays of its resources, and which seems to have attained at once substantial uniformity and inexhaustible variety,—endless diversity of means combined with prevailing unity of plan and operation?

3. Are they characterized by the selection of worthy *ends*,

* Bichat.

and of *means* precisely adapted to the attainment of those ends?

These are the criteria by which we estimate the wisdom of human agents; and we are obliged by the constitution of our minds to extend it to our judgment of any and every Intelligent agent whatever.

I. CONSTANCY OF PURPOSE.

In the first place, then, are the laws of Life distinguished by regularity and constancy? In other words, are individuals (whether plants or animals) usually conformed to the type of their species, both in respect to their structure and their functions? Few things are more striking than the immense disproportion which exists between the normal and abnormal organic *structures* that present themselves to our view, and the disproportion is scarcely less between the healthy and the diseased *functions*. Look at any tribes (vegetable or animal), and how rarely do we meet malformations,—deformed monsters who come into the world curtailed, in any important respect, of their fair proportions! Even where such cases do occur, they can be traced, in many instances, and probably will be hereafter traced in all, to disturbing causes, which have arrested the process of development.

So with diseased, morbid, or abnormal conditions of the functions. Health is the great law,—disease the exception. And, what is well worthy of remark, both plants and animals, as we recede from the artificial state induced by man's self-determined but often disturbing agency, seem to be less and less liable to disease. The maladies to which our own kind are liable seem, in most instances, to be either self-induced through ignorance or wilful transgression, or they are the sore legacy bequeathed to us by our ancestry. And even where there is a morbid state of the organism, observe, I, with what spontaneous and active energy it seems to strive

after restoration to the normal state, exerting those recuperative, self-adjusting powers which are the great hope and resource of every wise physician, and which often seem almost sufficient to give back life from the dead. Observe, 2, and especially that *even the morbid condition itself has its laws*, its characteristic marks, and processes. It is on this *constant* character and cause of *disease* that Medical Science founds itself. But for the fact that a certain uniformity prevails over the abnormal conditions of the animal frame, that these conditions admit of being observed and classified, and their vicissitudes foreseen, we could have neither Nosology nor Pathology.

It appears, then, that *Law* reigns over the animated world,—law stable and regular. Our own organisms, and every other organism with which we are acquainted, be it animal or vegetable, is the subject of established, permanent laws. This fact is at once an intimation and a command,—an intimation that, since law reigns in the domain of life, we are to expect it still more in the domain of spirit and of mind,—a command that we are to study the Creator's decrees, whether physical, physiological, or psychological, and, studying, are to respect and obey them.

Again, if we extend our view of living beings beyond the limit of personal observation to *remoter* parts of the world, we find the same or like laws obtaining. Wherever we meet an individual belonging to a certain species of plants or animals, there we meet the same essential characteristics. Much of minor diversity there will be, owing to climate, soil, situation, treatment, and parentage; but amid all these there are definite and significant lines which remain indelible. The dog, wherever he is found, whether in the wild or in the domesticated state, whatever peculiarities may have been superinduced, by training or breeding, is still a dog. He is neither a cat nor a lion,—he neither drops from a higher to a lower rank of species, in respect to his instincts, his habits, his term

of life, his mode of reproduction, nor does he, in these respects, mount to a higher rank. It is thus that Science becomes possible in Natural History, that we can have an intelligible and stable Zoology and Botany. Had plants and animals, amidst all their variations, no permanent and unalterable characteristics, they could not be described scientifically, nor could any general or fixed conclusion be reached respecting their structure and functions.

So, if we trace back the same species of plants *through past periods of time*, they will be found to have been marked always by the same characters. From the catacombs of Egypt,—from its embalmed remains and its sculptured walls,—from the disinterred memorials of ancient Etruscan life,—from the ruins of Herculaneum and Pompeii,—from the venerable monuments of Athens and Rome,—from ancient poets, historians, and especially from ancient naturalists, such as Aristotle, Pliny, and Theophrastus,—we are able to obtain specimens, models, pictures, or descriptions,—hints, through the aid of which we can reproduce, as it were, the organisms of the past, and compare them with those of the present. The same species are found to have existed then as now, and to have exhibited everywhere the same specific marks. There is every reason to believe that the wheat of Egypt was distinguished four thousand years ago from other grains by the same specific differences as distinguish it at present. So with its men and other animals. Birds rose and sang, carolling each its own notes, in its own key, then as now. From Northern and Southern Polar regions they then, as now, took their course towards the sunny tropics at the approach of winter, crossing the sea always by its narrowest arms, and following the guidance of the eldest and most experienced of the flocks. Then, as now, the tulip put forth its own fragrance, and with it a heat four and a half degrees higher than that atmosphere. Then, as now, the blood of every forty-two men may be assumed to have contained, as it does now, "iron

enough to make a ploughshare;" the human lungs contained "a coil of vital matter one hundred and fifty-nine feet square," and at each inspiration seventeen cubic inches of air were consumed.

Look at the vivid sketches of plants and animals scattered through the Old Testament. They were written from two to four thousand years ago; they are merely incidental notices, such only as a poet, moralist, or historian would naturally give whilst bent on his main object; they deal only with those palpable (as distinguished from scientific) characters which would strike the apprehension and rouse the interest of ordinary readers. Judged by these principles, they prove to be eminently true to Nature, if we suppose Nature to have been, meanwhile, constant to herself. Nowhere are the habits and peculiarities of Oriental animals and plants touched with such force and fidelity. Even where an animal is selected (as was the case with the lions into whose den Daniel was cast) to be an immediate minister of God's miraculous purposes, there his instincts may be suspended in some respects, but in others they remain intact, and while true to their mission, they are true also to their nature. So it is throughout the Bible, and the fact suggests to us one or two important considerations bearing on the credibility of the Old and New Testament. Either the sacred writers saw what they portrayed, and described it with pre-eminent truth and effect, in which case their fidelity in this one instance becomes a guarantee for their fidelity in others, or they drew these sketches without having seen the originals, in which case the wonderful power of delineation evinced by them can be ascribed to nothing short of inspiration.

Should we carry our examination of organized beings back to a *period anterior to the introduction of man on the globe*,—should we scrutinize the vegetable and animal remains that lie entombed in the various geological formations,—we shall there find evidence of the same *constancy* in the Laws of Life.

Wherever fossil and living races can be referred to the same species, the identity is as complete as though both belonged to the same era. Where the fossil species represent animals or vegetables that are now extinct, they have two characteristics, which point significantly to the permanency and regularity of organic laws. The first is, that, however dissimilar the species may be in some respects, they still have enough in common to indicate the prevalence of the same creative mind. This is a point to which we shall have occasion to refer hereafter.

The other characteristic of extinct fossils is, that they serve to fill up chasms in the great scheme of Natural History, so that, when taken in connection with existing species, they go to impart *completeness* and symmetry to it. For example, "the large calamites of the coal formation take their place in an existing family, *Equisetaceæ*. The fossil lepidodendra, of gigantic stature, are intermediate between living *Lycopodiaceæ* and *Coniferæ*; and even the extinct *Sigillaria* and *Stigmariae*, of which no living representatives exist, find, so far as the details of their organization are known, a definite place among existing animals."* It is so with the fossil remains of animals. Does not this striking fact refer us to the Design of a vast Intelligence, which forms one plan and one purpose to be worked out through immense tracts of time, and which, however modified in some of its parts or minor details, is still adhered to on the whole; so that we are sure that we stand in presence of the same God, whether we see Him creating and destroying an extinct species, at vast intervals, in remote geological epochs, or whether we survey Him bringing forth and carrying on through all their vicissitudes the species that now exist?

The fact that there is not an exact progression in respect to rank, through all these extinct species, up to those now in

* Harris's Preadamite Earth, p. 189.

being,—that the former fall into breaks and chasms, which separate existing families,—seems only to increase the verisimilitude, to make the proof of design more clear and conclusive. How would it be with a human artist? How does a great master like Raphael or Allston work out his conceptions? What was the process of composition of that noble but unfinished picture which the last of these artists left behind him when suddenly removed to higher efforts of his creative genius? With one great idea ever before him, one plan ever essentially the same, is it not likely that he would work now at one part, now at another,—one while laboring at the central figure,—then turning to subordinate details,—now sketching outlines, and then leaving them to stand long before they are filled out,—now bringing into bold relief the grand lesson to be taught, and now toiling perhaps for weeks at the humblest of its accessories? To an ordinary spectator, unacquainted as well with the art as with the self-prescribed plan of the artist, much of this may look like caprice; but to him who comprehends that plan, and who understands the principles on which the artist works, all will seem in keeping, and it will be evident that constant approaches are being made towards the one great purpose.

I. (b) INDICATIONS OF FREE AND INTELLIGENT FORESIGHT.

We have thus traced a few indications of the *constancy* and *uniformity* of the Creator's laws of Life as evidence of his Wisdom. But how can we know that these laws are not the expression of a surd and inflexible necessity which has forever reigned over all sequences and all phenomena, whether in the organic or the inorganic world? or, how know we that these laws, even though they emanated from an Intelligent First Cause, be not now, as from the beginning, so fixed as to preclude even his own interposition, moving forward in virtue of their own inherent though derived energy? We might

answer, that such a supposition involves logical and ethical difficulties of a most unmanageable kind. But there are in the way of it, also, certain physiological difficulties, which we ought to refer to here.

In the first place, both systems of matter or of material bodies (organic and inorganic) clearly evince the presence of choice,—the selection of one among several different laws,—the deliberate act of a free and self-determined will. As in the planetary systems, there are provisions (such as the earth's mass, the law of gravitation,—the relation of equality between the motions of rotation and of revolution) for which there seems to be no necessity, and which might, therefore, have been otherwise, so it is in the organic world of living beings. We can see no necessary reason why matter in one class of bodies should have been without life; in a second (vegetables), should have been endowed only with life; and in a third (animal), be endowed both with life and with the power of sensation and of voluntary locomotion. So far as we can understand, there was no absolute necessity that ruminating animals should have cloven hoofs; that bees should construct their cells of hexagonal shapes; that no other insect should do the same. Assume that there was design,—an Intelligent First Cause,—and then we can see a *final* cause for these provisions, though we can discover no efficient or necessary cause. But, in the absence of such a designing mind, the apparent selection seems inexplicable. That selection, then, is indicative of a sovereign will and appointment, more especially when we take it in connection with what look like *intentional* deviation from the prevailing order or arrangement. Such deviation is observed in the celestial system. The satellites of Uranus have a retrograde, rather than a direct, motion. It may be observed, too, in the vegetable and animal worlds; for instance, in the development of the embryo of a vertebral animal, the organs first laid down are not those that belong to nutrition,—to the maintenance of life (as we

might expect on the principle of uniformity),—but they are the organs connected with the nervous system,—i.e. with the higher powers of the animal. Again, carry deciduous plants across the Equator, and in spite of opposing physical causes, they put forth their leaves at the approach of winter. Or, again, go back along the series of geological formations, and we trace in all of them the plants called *Coniferæ*, whereas the *Sigillaria*, their companion, in the first exist no longer. All this looks like the intervention of a Sovereign and Intelligent Will, breaking up, as it were, the routine of Nature; causing departures from the usual course of her phenomena, as if for the very purpose of proclaiming his own presence and agency.

And this consideration becomes more weighty, if we consider the relation between organic and inorganic bodies. Observed separately, both evince the presence of contingency,—the supreme direction of an Intelligent, all-controlling Will. Taken together, and in their mutual relations, that evidence becomes still more impressive, for we find that the one system is fitted, as it were dovetailed, in a most remarkable manner, into the other. Plants are adapted, by their size, weight, and hardness, to the force of gravitation and of wind or water; by their leaves, to just such an atmosphere, in respect to density and chemical constitution, as surrounds them; by their roots, to the soil in which they stand, and so on. Animals are adapted, likewise, to the force of gravity, as it respects their magnitude, their strength, and the texture of their bones; to the air, by the constitution of their blood and lungs; to water, by the laws of nutrition and assimilation; to climate, by the nature of their covering and food. Can anything short of Intelligence—short, we had almost said, of Infinite Intelligence—explain these adaptations? Here are beings of two different worlds brought together, each bearing clear and expressive signs of having sprung from the free volitions of a sovereign will, and they are found to correspond to each other in a manner the most exact and marvellous. Shall this be resolved into ne-

cessity? Necessity cannot solve the problems that are presented by the properties and collocations even of inorganic matter, still less can it solve those which belong to the living organized world, whether of plants or of animals. Shall it pretend, then, to solve the yet more wondrous fact that, with all these apparently contingent attributes, each should be so fitted and adjusted to the other?

Thus do we seem to see, in the *Laws of Life*, clear and incontestable traces of a designing First Cause. Do we not see more? Is there not evidence in these same laws that as they were first established by an Intelligent Creator so are they contingent on his will, and therefore liable to be set aside either for a time or permanently? In how many cases have new species made their appearance on the globe? In how many other cases have pre-existent species been destroyed? We have already seen that, in the estimation of naturalists most eminent for knowledge and philosophical sagacity, neither of these events appear to take place without the intervention of supernatural power. Here, then, are fundamental changes in the system of Life, indicating the immediate and miraculous agency of God,—not changes which betoken departure from great purposes, but changes subordinate to them, inasmuch as they indicate the prevalence of the same ideas and principles,—seem to tend towards the consummation of the same plans, and serve, above all, to advance the one grand end of keeping alive in the minds of intelligent creatures a sense, deep and influential, of the divine and supernatural,—of a Power above nature, ever present, ever free even from bondage to its own laws, and ever acting directly on our welfare.

Viewed in this light, *miracles in the physical history of the globe* prepare us for *miracles in its moral history*. From entries made on the *Records of Creation* we are pointed forwards to corresponding entries in the *Records of Revelation*. From gazing on monuments of creative or destroying power in Nature, we naturally turn to gaze on like monuments in Sacred His-

tory. We are not surprised to hear that a flood should have been sent to drown the world of the ungodly; for even before and often had overflowing torrents been commissioned to sweep from the earth vast tribes of living things. We are not surprised to read that "God should raise the dead," for all along the mighty tracts of geological time are memorials of creating and re-creating Power. That God should interpose supernatural displays of his power before man seems not unlikely, if He had already made them previous to man's appearance on the globe; and thus it is that the laws of life become, in respect to a miraculous Revelation, what Moses was in respect to the yet greater Prophet,—even a "schoolmaster to lead us to Christ."

II. EXUBERANCE OF CREATIVE SKILL.

We have now seen that the *Laws of Life*, though constant, seem not to be necessitated; that they indicate a steady but voluntary adherence to the same principles, through periods so vast as to transcend even our conceptions, and that they thus point us to a wise and faithful Creator. Let us inquire, in the next place, if we cannot see in these laws indications of an *exuberant Wisdom*, which never seems at a loss for new displays of its power and fertility. We estimate the Intellectual resources of a human inventor not so much by the multiplicity of his individual works as by their variety, by the manifold ways in which he puts forth his powers. Mannerism, or the servile repetition of the same methods, the constant reproduction of the same material in nearly the same forms, we regard as the work of a limited capacity. How is it in this respect with the Creator's Laws of Life? That they have great constancy as to time or duration, and a prevailing uniformity as to plan, we have already seen. We now remark that, while the fundamental notes are the same, their combinations and variations are endlessly diversified.

Look first at *the same species*. Within the limits of many of them (whether vegetables or animals) there are diversities without number, and these seem destined to go on increasing forever. No two individuals of the same species are perfectly similar in all their properties and accidents. No one sees two roses precisely alike in size, figure, number, and arrangement of parts; in color, odor, or other particulars. Who believes that any rose which shall bloom hereafter, through all time, will in each one of these respects be perfectly similar to any one which has ever bloomed heretofore? So with any two animals of the same species. These variations are to be referred to causes and laws of the Creator's appointment. Some of these causes we can discern; others, in the present state of science, are undiscoverable. Supposing two parents to have been the sole progenitors of a species now embracing numberless individuals, we can clearly see how multitudinous variations should arise (through the medium of principles which God has put into operation).

(a) In the *first* place, there is the principle of *hereditary transmission*,—the principle that the offspring, be it plant or animal, partakes of the separate characters of both its parents; so that, beside the specific attributes common to both, it shall have properties compounded out of those which are peculiar to each. Thus, it shall have the sex of one or the other,—it shall have, if an animal, the figure of one, the color, perhaps, of another; the nervous sensibility of the mother coupled with the sex and vigor, the color or shape, of the father. There is thus diversity between parents and the first pair of their offspring. Other causes come in to make succeeding offspring of the first generation different from the eldest. Not only are the general characteristics of the parents reproduced in each of the offspring, but peculiarities in their condition, when the reproductive powers are excited,—such as the state of health, of structure as affected by food or temperature, of sensibility, if the parents be animals. All these, and many more, are

causes which tend to induce dissimilarity even among the immediate descendants of the first parents. When we come to these descendants again, with all their peculiarities, and consider them as reappearing under the same, and perhaps more varied, influences in a third, fourth, and later generations, we see how provision has been made in the Laws of Life for the boundless multiplication of differences in individuals. But all these differences resulting from laws of God's appointment are so many expressions of his inexhaustible fertility.

Observe, however, that in respect even to these *diversities* there are such *limits* as to preclude confusion, and to show that the Creator never loses his purpose nor forgets the principles on which He works. Within the bounds of a species there are causes which tend as well to uniformity as to diversity. *The law of hereditary transmission*, already noticed, is one of these causes. Whoever has considered the subject must have been struck with amazement at the manner in which some peculiarity of a progenitor will reappear, as if from the grave, in the person of a remote descendant. Though many causes of divergency have been operating, yet we sometimes meet one of our own race who, in the tones of his voice, in some peculiar hitch of his shoulder, in his gait, or in the malformation of a finger, shall seem to be the fac-simile of a grandfather or a great-grandfather. A peculiarity of the ancestor shall seem to have disappeared for two or more generations only to startle us more by its reappearing afterwards, and to alarm us with the thought at what a distance our vices or our sorrows may be reproduced in the persons of those who shall come after us. We are all familiar with the fact that hereditary insanity, after lying by stealthily for one or two generations, will sometimes break out suddenly in almost the same form; and the same law is apparent in many other directions. We recently met a friend, who told us that, in visiting a gallery of old pictures in a distant city, where no one of his near relatives had ever lived, he was startled at the

sight of a portrait, which was the exact likeness of his own father. On inquiry, or rather on taking down the frame, he found on the back of it his father's name. He learned, afterwards, that it was the portrait of a gentleman who lived many years previous in a distant land, and who not only bore the same name as his parent, but was descended from the same stock. Thus, through the same law, is provision made for uniformity in the midst of variety, and for variety in the midst of uniformity. The individuals within the same species can be arranged into groups called varieties, which have distinguishable characteristics, that tend some to perpetuate themselves through indefinite periods,* others to disappear when the modifying causes are withdrawn, leaving later generations free to revert to the original type.

It should be observed, too, that, through whatever variations a plant or an animal may be carried, it never parts with its specific character. Men do not gather grapes of thorns nor figs of thistles. Between those of different species there are chasms which are impassable. As no system of treatment or domestication will transform a lion into a lamb, so

* The dog is a good example of peculiarities, induced at first by training, but perpetuated in the offspring by the law of hereditary transmission. The *pointer* dog, which hunts partridges, the *spaniel*, which hunts woodcock, and the *terrier*, which hunts only rats and other vermin, represent varieties superinduced by education in the first instance, and then propagated. For example, the spaniel, if taken into the field soon after birth, and without any older dog, will at once give chase to the woodcock, and to no other game, though he has never before seen the object of his instinct. In the first part of Prichard's Natural History of Man, where this subject is discussed, an instance is mentioned on the authority of an intelligent sportsman, in which a young spaniel, taken out under these circumstances, not only went in search of the appropriate bird, but, as the weather was frosty, and some parts of the ground and streams were frozen, this animal, as if he had had long experience, went at once to ground not frozen, it being there only that the birds gather in such weather.* Of varieties superinduced in a vegetable species, the *rose* is a familiar example. Much of the skill of Horticulturists consists in arresting and propagating any good qualities which may be created casually, or inducing them by artificial means.

* Prichard's Natural History of Man.

will no intermixture of species through procreation. Each male has an instinct that keeps it to the female of its kind. "Buffon reared puppies of the wolf, fox, and dog together, to familiarize them with each other; but when they were in heat the females of each species exhibited an insurmountable repugnance to the male of the other, and mortal combat ensued instead of fertile union between the different sexes of the different species."* Where union is brought about by constraint, the hybrid offspring are sterile. No mongrel race, produced by such a union, can perpetuate itself. The mule is a familiar example. There seems in these cases to be an invincible tendency towards reversion to the pure breed. A few exceptional cases there may be; but such cases, as an eminent naturalist† has observed, serve only to establish the general rule of the infertility of specifical hybrids. Where they do propagate, the intermediate race is degenerate in character, feeble in structure, and in the course of a few generations becomes extinct.

(b) *Transmutation of Species.*

Yet, in face of these facts, there are those who maintain the doctrine of *transmuted species*. They maintain that either through strivings or appetencies of the animal itself, or through inherent irrepressible tendencies, the lower forms develop themselves into the higher, and that thus, without intervention of the Creator, life may ascend from plants to animals, and from animals of a lower to those of a higher organization. That God *could* endow the lower species with such powers of progression we do not deny. If they existed, they would stand as monuments both of his power and of his wisdom.

* *Annales de Museum*, t. xii. quoted by Owen. See, also, Hunter's "Animal Economy," by Owen.

† R. Owen.

What the Almighty *can* do is not a question for mortal man to discuss. The great question in this connection is what He *has* done. Do observed facts authorize us, in the present state of knowledge, to conclude that any known species, existing or extinct, has been thus developed? Can the followers of Lamarck, Maillet, Geoffroy St.-Hilaire point us to any living plant or animal which has been observed either to raise itself to a higher or to degenerate into a lower *species*,—to take to itself a nature and character specifically new? Can they point us to the petrified monuments of any such transmutations in the rocky formations of the globe? These formations extend through an almost illimitable period of time. They were deposited very slowly, and it seems, therefore, inconceivable that they should not have arrested and embodied some of the many millions of developments which, according to this theory, must have been going on. Until examples of this kind are produced which will command confidence, which will unite in their support the suffrages of respectable Zoologists and Palæontologists in different countries, we may be excused for saying that the theory of development or transmutation of species is not supported by conclusive proof; and until proven it should not require us to accept it as a substitute for the doctrine which makes God the immediate author of each species of plants and animals.

In the mean time, it becomes the advocates of that theory to reconcile with it many facts which are now received by Scientific Naturalists. Is it not a fact, for example, that where transformations of any kind (as in case of the butterfly) are observed, it is not the use nor any striving of the animal that precedes the development of the organ, but, on the contrary, the organ is developed before there can be any use for it? The larva of the winged insect can only walk; but if we take it and dissect it before its metamorphosis is completed, we find within an apparatus for flight through the air. How can such facts be reconciled to the doctrine of appetencies?

Is it not a fact, again, that among the oldest fossil vegetables we find dicotyledonous plants (*i.e.* those of the highest form) coexistent with acotyledonous (*i.e.* those of the lowest form)?—and they are coexistent now. This does not look like progressive development. Is it not a fact, also, that the three lower types of animals, the invertebral (*i.e.* radiata, mollusca, crustacea), coexist throughout all the geological epochs? And in respect to the vertebrated animals, on which the advocates for development most rest, we do not find that, in ascending from the earlier to the later formations, the improvement in organization is by any *regular* progression. It is true that fishes existed before reptiles, reptiles before birds, birds before mammalia, mammalia before man. But it is not true that the least perfectly organized fish or reptile or bird existed before all others of the same kind. If we take the *orders* within each or any class, it does not appear that they went on progressively improving by regularly ascending steps. Nor is it true of any particular organ (the eye, for instance) belonging to any particular class (as crustacea) that it has gone on improving from the first to the last. We may search the highest authorities in Botany, Zoology, and Geology, and we shall find hardly one among them disposing of these points in a manner favorable to the doctrine of development or transmutation of species. In the absence, then, of well-attested facts in its support, and in the presence of such facts as these in refutation of it, this doctrine can present as yet few claims to respectful consideration.

(c) *Embryotic Theory.*

But look, it may be said, at the stages through which the embryo passes before its birth! Is there not proof here of the progression or transmutation of species? While in embryo, is not the mammal successively a fish, a reptile, a bird? And is not this proof that the organic germs of all animals are

identical, and that, under "favor of peculiar circumstances," a fish, at some time, produced a reptile, a reptile a bird, and a bird a beast? We answer, *first*, that before a cause can be admitted in Philosophy as more than a mere hypothesis, it is necessary to show not merely that it is sufficient to account for a given phenomenon, but also that it has a real existence. Hence, until some example of such an advance shall have been observed and placed beyond question, the supposition must be regarded as a mere conjecture. But, *secondly*, as to the alleged facts, is it certain that, in the successive stages of the foetus of a higher animal (such as man), it is at any time identical with the foetus of a lower one? For an answer to this question, we can only appeal to Physiologists and Zoolologists; and we would especially interrogate those who look with more or less of favor on what may be called the *Embryotic Theory*. Their answer, when properly sifted, if we understand it, amounts merely to this: that if we take the embryos at their earliest stages, there is a general resemblance; that at later periods, to discern any resemblance we must confine our attention, for the time, to some one organ or part. If we look at the central portions of the foetus, we must neglect its organic appendages, essential alike to its continued life and to its matured structure, and also to its whole mass. Even in respect to a single organ, as the brain, Fletcher (in his *Rudiments of Physiology**) after speaking of it as a fact of the highest interest and moment that the brain of every class of animals appears to pass, during its development, in succession through the types of all those below it, adds, "It is hardly necessary to say, that all this is *only an approximation to the truth*, since neither is the brain of all osseous fishes, of all turtles, of all birds, nor of all the species of any one of the above order of mammals, *by any means precisely the same*; nor does the brain of the human foetus *at any time precisely resemble* perhaps that of *any individual whatever among the lower animals*." Car-

* Quoted in Harris's *Preadamite Earth*, p. 281.

penter, who is also disposed to look with some favor on the theory, says, "It was at one time stated as a general law, that all the higher animals, in the progress of their development, pass through a series of forms analogous to those encountered in ascending the animal scale. But this is not correct (except in very few cases) AS TO THE ENTIRE ANIMAL, and in respect to individual organs, the resemblance is not at all in the form, but in the condition or grade of development."

Such admissions would seem to deprive the facts of much value for the hypothesis in question, more especially when we add to them that three entire classes (radiata, mollusca, and articulata) are passed over without any foetal type; that the organs first laid down belong to the higher function (sensation), not to the lower (digestion); that the only resemblance, according to Müller, which can be traced at any time between the embryo of a man and a fish, is that of a joint resemblance, at the beginning, to the common type of all vertebrated animals. Whatever all are to have in common, all exhibit in embryo; but as each is developed it separates from this common type. Thus "all embryos have at first arches, separated by clefts, at the sides of their necks, which have been unaptly termed branchial arches. They are merely an expression of the general plan of structure, and have as yet none of the attributes of branchiæ." "It is only in fishes that they undergo a progressive metamorphosis, consisting of the development of the branchial laminæ upon some of the arches.* In short, we may dismiss this theory in the language of one of the first

* Müller's Physiology, by Bailly, p. 1592. Dr. M. Barry has traced the process of development in mammalia with great care and skill, and he states that, from the commencement of it, when the germinal vesicle disappears, two cells are formed in its stead, each of which gives rise to two other cells, and so on. From this commencement the development is different for different tribes of animals,—different as to the shape of the cells, the chemical changes they undergo, and the number and complication of the parts. It is worthy of observation, too, that when the development of a superior animal is arrested by some disturbing cause, the result is not a perfect inferior creature, but a monstrosity.

Physiologists of any age." "Not long since it was supposed and seriously affirmed by many naturalists, that the human embryo passed through the different stages of development which are permanent conditions of other animals. This was a very bold hypothesis, and one that is by no means correct. Its falsity was well demonstrated by Von Baer."^{*}

Thus, then, do physiological arguments in favor of the transmutation of species disappear in proportion as they are scrutinized, and we revert to the previous faith of mankind, founded alike, apparently, on Scripture and on observation, "that species have a real existence, and that each was endowed, at the time of its creation, with the attributes and organs by which it is now distinguished."[†] The whole number, therefore, of existing and extinct species, amounting probably to as many as one to two millions, point each to the *supernatural power of God* for their origin. One million of separate creations are spread around us to proclaim the manifold wisdom of the Creator, to proclaim at the same time that nothing exists without Him, and that when He puts forth his power He need not repeat Himself. By the number of independent species, He proclaims the vast exuberance of his wisdom and power,—by the provisions which He has also made for multiplying varieties within the same species, He seems to proclaim further that this power is equally exuberant, though it act through second causes.

But is it not beneath the dignity, it may be asked, of such a being as God to stoop to such acts of originating power? A popular writer[‡] has actually represented it as "a most inconceivably paltry exercise of Divine Power" to create one of the lower species. He has also charged those who believe this as "supposing God to be constantly acting in particular ways for particular occasions,"—"to be constantly moving

* Müller, *ubi supra*.

† See De la Beche's Geological Researches, p. 239.

‡ *Vestiges of Creation*, p. 164, 3d edition.

from one sphere to another ;" thus taking "the narrowest of all views of the Deity, and those characteristic of a humble class of intellects." To declamation of this kind, emanating from one who has shown himself by no means strong, either in facts or in logic, it may be sufficient to reply,—*first*, that between holding that God constantly acts in particular ways for particular occasions, and holding that He exerted creative Power but once, there is an alternative to be found in the opinions held by Newton and Boyle and Cuvier, and all the most illustrious lights of Science, that to govern the world by general laws is not inconsistent with the interposition of special acts of creative or miraculous power. *Second*, that to substitute development, the evolution of natural law, for direct efforts of the Creator in producing a species, makes the act none the less his, unless we also deny that this law and the power by which it acts are his. *Third*, that to suppose the Creator compromises his dignity by condescending to the creation or care of lowly beings, is not only to degrade Him to the level of an earthly sovereign, who upholds his state by pomp and disregard of inferiors, but even below that level; for never do the great of this world more win our affection or reverence than when they show that, with exalted station and high mental gifts, they combine gentle and condescending hearts.

DISTRIBUTION OF SPECIES.

We are brought, then, to the conclusion that, in multiplying the species of plants and animals, God has placed before us so many separate monuments of his creative power. Worthy of remark also is the manner in which He has diversified the face of animated nature by the *distribution of different species in different countries*. Suppose a spectator raised above the earth to such a height that he could remain stationary while the globe rolls beneath him on its axis; suppose him endowed with such powers of vision that he could discern every

variety of plants and animals that dwell upon it, whether on land, in water, or in air, and that he occupies successively such positions that each zone shall pass directly beneath his feet,—what would he observe? He would find that of two thousand eight hundred and ninety-one species of Phanerogamous plants, described by Pursh as belonging to the United States, only three hundred and eighty-five are found in Northern or temperate Europe; that of all the plants observed by Humboldt and Bonpland in Equinoctial America, but twenty-four species are found in any part of the Old World; that of more than four thousand species discovered in Australia, less than two hundred are known in Europe, and that even on the same continent, and in nearly the same latitude, where, too, there is constant communication between different sections, *those sections are distinguished each by its peculiar Flora.* As an example of the last fact, we may mention that in China there is one assemblage of species, a different one near the Black and Caspian Seas, yet another on the Mediterranean, and yet another on the great platform of Tartary.

It is the same with animals. *Almost every large territory has its own Fauna.* If, for instance, we take the three equatorial districts,—American, African, and East Indian,—we shall find distinct quadrupeds in each. So with Australia, where marsupial animals prevail; with New Guinea, New Britain, and New Ireland, where there are hardly any native warm-blooded animals; with the Southern extremities of South America and Africa, each having its own Fauna, and with the Northern temperate regions of the two Continents. The Eastern Continent, in the temperate zone, is much richer in *native animals*; the Western temperate zone is more abundant in *native plants*. It is the same in the ocean. *At different depths, as well as in different latitudes, we find different orders of Fishes.* In recent submarine researches, Professor Forbes has ascertained that even *on the bed of the sea* living beings

are not distributed indifferently ; but certain species live in certain parts, according to the depth, so that the sea-bed presents a series of Zones or Regions, each peopled by its peculiar inhabitants. Eight well-defined Zones, for example, were found between the surface and the depth of two hundred and thirty fathoms in the Eastern Mediterranean. Similar Zones of depth are found in the *organic remains* of upheaved beds, so that, ultimately, conclusions may be drawn as to the depth at which a given stratum, containing remains, was deposited.

UNITY OF THE HUMAN RACE.

In truth, man seems to be the only cosmopolitan, the only universal denizen. But is there, it may be asked, *only one species of men?* Is the African, or the Indian, or the Mongolian to be referred to the same species as the European and those of pure Caucasian blood? We answer that, for a resolution of this question, *Philologists* have interrogated the different known languages of the world, living or dead; *Psychologists* have investigated the mental characteristics of the different races of men; and *Physiologists* and *Zoologists* have compared their respective organizations, functions, and habits. The result has, in each case, pointed to a common origin and a common nature for all who bear the name of men. The physiological conclusions, the only ones quite pertinent to our present line of argument, are thus summed up by Dr. Prichard, at the close of his great work on the Physical and Natural History of Man: "I have endeavored to establish the general fact, that no remarkable instance of variety is discoverable in mankind of which a parallel may not be found among the lower orders of the creation. I have also attempted in the first chapter to prove that tribes of *animals which belong to different species* differ from each other, physically, in a variety of particulars, in which the most dissimilar of human races display no such differences. In the *first* place, separate but

even proximate species differ from each other in the principal laws of the animal economy, as those which govern the duration of life and the facts which relate to reproduction. Human races coincide strictly in all these respects. *Secondly*, different species of animals have different diseases,—are subjected to different pathological laws, if I may use such an expression. All human races are liable to the same diseases; at least the varieties which exist in these respects are such as are produced by the influence of climate. *Thirdly*, distinct species do not freely intermix their breed, and hybrid plants and animals do not propagate beyond, at most, a very few generations; and no real hybrid races are perpetuated, but mixed breeds descended from the most distinct races of men are remarkably prolific." "The inference is obvious, if the mixed propagation of men does not obey the same laws which universally govern the breeding of hybrids, the mixed breeds of men are not really hybrid, and the original tribes from which they descend must be considered as varieties of the same species."

Thus does Science, as now instructed, unite with Revelation, as now interpreted, in assigning a common origin to mankind. Of one blood hath God made all the nations of the earth,—by one blood, therefore, may all be redeemed. Sprung from one common progenitor, they can lean upon one common Saviour. In taking upon Him the nature of the seed of Abraham, that Saviour took on Him the nature of all human flesh. Therefore for all He died, and in Him all alike may live. So the sublimest doctrines of our faith connect themselves with the problems of our physical history, and it becomes something more than a curious question in Science, whether there be one or several species of men. As to the rank which belongs to our race, the Bible plainly declares that in creation a high pre-eminence was assigned to man. It gives no intimation of his having been developed or transformed, in virtue of mere natural law, from an ape or a ba-

boon into the lord of creation. It teaches that God formed him out of the dust of the ground; that into this form, thus moulded out of base material, but clothed with transcendent beauty, God Himself breathed the breath of life, and man became a living soul. Does Science teach a different lesson? We think not. Says the great Blumenbach, in his work on the *Native Varieties of the Human Race*, "The peculiar characteristics of man appear to me so very strong that I not only deem him a distinct species, but also put him into a separate order by himself. His Physical and Moral Attributes place him at a much greater distance from all the orders of mammalia than those are from each other, respectively. *Order Bimanum; Genus Homo*; the *Species* single, with several varieties hereafter enumerated. *Characters*—Erect stature; two hands; teeth approximated and of equal length—the inferior incisors perpendicular; prominent chin; rational; endowed with speech; unarmed, defenceless." Go not, then, man, when thou wouldest trace thy lineage, down through a long train of chattering monkeys and hooting owls and crawling reptiles and slimy fish. Such an origin, even if thou couldst find it, would not exalt thine aspirations, nor help to fire thy soul with a generous ardor for duty and for glory. But Heaven-descended! thy origin is not there. A spark divine warmed and vivified the clay out of which thou wert framed. In the grandeur of thy origin read the dignity and responsibility of thy trust. Think how God must love the choicest of his earthly handiworks,—that alone on which He imprinted his own image,—and wonder not when thou hearest that to save such offspring from ruin and death He spared not his best Beloved—the son of the Highest.

In thus maintaining the permanency and immutability of those specific differences which separate different ranks and orders of organic being, we seem to have been upholding great *moral* distinctions. Nature shadows forth, in her works, lessons full of solemn admonitions. Speaking through in-

animate, and much more through animated, substances, she seems to whisper truths which are destined to be more clearly unfolded in the constitution and History of Man and in the teachings of Revelation. Why should she not thus symbolize, as it were, lessons which ought to meet us everywhere, which may well beam upon us from every object we behold? Certain it is that Christ employed the very principle on which we have been insisting to teach a great moral lesson. "Do men gather grapes of thorns, or figs of thistles?" said He, when He would impress upon us the still neglected truth that our principles must be holy if we would have our actions right; that we must make the tree good if we would have its fruits good. The awful fact that actions reproduce and perpetuate themselves, that they will propagate their own kind and no other; that long after we have forgotten them, their legitimate offspring will start up along our path to cheer or to scourge our souls,—this is a truth which seems to be heralded in the constitution of all things that have life. "Whatsoever a man soweth, that shall he also reap. He that soweth to the flesh, shall of the flesh reap corruption; and he that soweth to the Spirit, shall of the Spirit reap life everlasting." This is fearful truth for the sinner and the ungodly, but only encouragement for the good. "Let us not be weary in well-doing, for in due season we shall reap, if we faint not."

IV. DIVINE UNITY.

We have thus reviewed some of the tokens of the manifold Wisdom of God to be observed in the vast variety of living creatures. But does not this review compromise the doctrine of the *Divine Unity*? What assurance can we have, amid such endless diversity, that there is not more than one,—that there are not many Creators? We reply, that we must bring to bear here the same principles which we employ in ascertaining whether human productions have the same or different

authors, *Ex ungue leonem*. Every agent, small or great, has his own peculiar character, and that character he imprints in some mysterious but most significant manner upon all (even the least) of his works. Take the greatest of poets or historians, and, though devoid of mannerism, though pre-eminent for versatility and abundance of resource, you still find the same *style* more or less apparent in all he writes. Is it not so with the Records which the Creator has placed before us in his works? with the Great Drama of Life which is ever moving on towards its final catastrophe? If it does, indeed, emanate from one and the same mind, we shall expect to find everywhere impressive traces of one and the same style. What, then, is the fact?

Look first (*a*), at the whole world of organic nature. Secondly (*b*), at what certain portions of the vegetable and animal kingdoms have in common. Thirdly (*c*), at the traces of unity of composition in those kingdoms, considered each by itself; and Fourthly (*d*), at the harmony of coexistent parts in the same individual.

(*a*) Throughout the whole domain of Organic Nature we find life and functions that pertain to life. Each individual, whether it be a vegetable or an animal, contains within itself the powers necessary both to the production and the maintenance of all the several parts that go to make up its whole. And these powers produce results so similar, in both the kingdoms of organic life, that the same names have been given, by physiologists, to the most important vital processes in each. For example, both plants and animals take *food*, *digest*, and *assimilate* it, *circulate* fluids, *respire air*, exert *reproductive power*, and alternate diurnally between the *waking* and *sleeping* states. Both, too, exhibit the functions of *contractility* and *irritability*. If we pass behind their more obvious functions and trace the development of their respective germs, we find that, in both, that development takes place in substantially the same way, cells being elaborated from the pre-ex-

istent structureless germ, and the various elementary tissues being elaborated from these cells. Different as plants and animals are, then, they have enough in common to show that they are the workmanship of one hand.

(b) Consider again what *certain portions* of these kingdoms have in common over and above what we have specified. If we go to the seaside and take up specimens of algæ (sea-weed) and protozoa (sponges, etc.), we find some of them so rude in their organization that they seem to be little more than anticipations of future organisms. They have been called *plant animals* and *animal plants*, because it is not easy to determine, in respect to either, whether it be a vegetable or an animal structure. But turn from these rude structures to the *radiated* animals (such as the star-fish). We find here that the several parts are ranged round a common centre; that they have a certain position for the reproductive organs; are loose in texture, and of one color. Are there not plants having all these peculiarities? Take up any of the *fungi* (the common mushroom is an example), and we find there the same arrangement of parts round a common centre,—the same disposition of the sexual organs,—a like looseness of texture and a similar color. Or, go to the *mollusca* (oysters or clams are examples), and we have there the spiral mode of development and additions to the animal made at its edges. It is the same with *mosses* and *ferns*. So, if we compare the *articulata* (insects, lobsters, etc.) among animals with *endogens* (grass, palms, bamboo, and cane) among vegetables, we find that they agree in having an external skeleton for the support of the softer parts, which are internal; in having new matter added to the interior; in being divided into similar segments, each of which contains the organs necessary to life, and in having *tracheæ* for the admission of air distributed throughout their whole mass. Finally, if we compare *vertebrated* animals with the *exogens*, we find that the harder parts in both are within; that additions are made externally, and that in both the internal respiratory

apparatus is confined to a particular situation in the fabric. Here, then, are different plans of structure to be found both in plants and animals; but the differences are not without order and symmetry. The same principles, employed in a certain division of the one, seem to have been transferred to a correspondent division in the other; so that, when the two kingdoms are placed side by side, they are seen to have their correspondencies, their analogies, and affinities, and thus to carry our minds upwards to one Supreme Intelligence as their source.

(c) If we examine each organic kingdom separately, we shall be struck with traces of *unity in composition*. We take a single example from each. It was suggested long since by the German poet, Goethe, who was also an able Naturalist, that all parts of the flower and fruit of most plants (especially the Phanerogamous) are but modifications of a single organ, the leaf. The suggestion was at first neglected or ridiculed. After some years it was made from another quarter, and the progress of Scientific Botany, in the mean time, rendered it necessary that the Theory should be thoroughly investigated. The result was conclusive,* and the scientific world are now

* It ought, perhaps, to be stated, that this Doctrine of vegetable metamorphosis seems to have been obscurely stated or intimated by Linnaeus; but it failed to attract the notice of any succeeding Botanist until revived and elucidated by Goethe. His Essay was first published in 1790. Until 1829, when it was translated into French, at the instance of De Candolle, it was hardly noticed. In the interim (in 1813) a similar view had occurred to De C. himself, and had been published by him; while Sir James Edward Smith, in his Introduction to Physiological and Systematical Botany (published in 1807), put forth, independently, the same theory. It embraces even more evidence of unity of plan and purpose than I have ventured to express in the text. To adopt the language of one of the first American Botanists (Dr. Darlington), "All the appendages of plants, from the rude cotyledons of the germinating seed to the most delicate component parts of the perfect flower, are nothing but modified forms of that expansive tissue (the cortical) which envelops the tender shoots of plants, and is the principal seat of vegetable life; or, in other words, the organized covering called the bark of plants, is the original *raw material* (if I may so term it) from which are

nearly united in regarding it as true. All the portions of the flower that pertain to fructification—the calyx, the corolla, the petals, the pistils, stamens, ovula, and fruit—are but developed or modified leaves. He who merely judges by un instructed sense cannot believe it ; he cannot persuade himself that the pure white petals of the lily, the red, blushing rose, the sweet-scented jasmine or orange flower, the long, trumpet-shaped blossom of the honeysuckle can be merely transformed leaves. Let him, however, under the guidance of a skilful Botanist, compare the one with the other in respect to anatomical structure, arrangement around a common axis, disposition on a certain plan with respect to each other, and the laws by which they are developed, and his doubts will probably vanish. He will see clear evidence that the Creator can employ one organ for a great variety of different purposes, and cause it to pass through several different forms, and in that fact he will see additional proof of the Wisdom and Unity of the Godhead.

So with ANIMALS. Take the *vertebrated* classes for an example. It was suggested, by the same great poet and naturalist, that one organ in the skeleton might be the basis on which all parts of the skeleton of all vertebrated animals are constructed. A single vertebra was the type selected, and the hypothesis was that, by enlarging and modifying the spinous processes of all the vertebræ, we should get the necessary cavities for the spinal marrow on one side of the backbone, and for the heart, lungs, and stomach on the other. This hint has been worked upon with all the diligence and enthusiasm which characterize the transcendental Anatomists of Germany, and it seems likely to take its place beside the doctrine of the metamorphosis of

formed all those multiform organs or appendages to the stem and branches known by the name of *Leaves, Stipules, Bracts, Involucres, Glumes, Calyces, Corollas, Nectaries, Stamens, Pistils.*" See Dr. Darlington's "Essay on the Development and Modifications of the External Organs of Plants."

leaves.* As between different vertebrated animals, it is certain that there are affinities or (as comparative Anatomists of our day would rather term them) *homologies* where we should little expect them. Thus, the longest-necked Quadruped at present known, and the shortest-necked, have the same number of bones in the neck,—the giraffe the same as the hog or mole. And the bones which we recognize in the paddle of the turtle are, by slight changes and gradations, adjusted so as to form the fin of the whale, the wing of the bird, and the paw, foot, or hoof of the land mammifers.†

(d) Consider, finally, *the harmony and correspondence of the several parts and organs which go to make up the same individual.* There is that which can be explained only by assuming that one Intelligent Mind has put these parts together. The adjustment is such that a material change in any one part would require a corresponding readjustment of the entire structure. Nothing is isolated or incongruous. We may, in succession, consider each organ as being the principal, and then we shall find, on examination, that every other organ will seem to have been constructed with special and most skilful reference to it. Hence it has been well said that an organized substance is one, all the parts of which may be considered as mutually means and ends.‡ Suppose, for instance, that the teeth of any animal underwent a material change as to form, constituent material, and mode of interaction. Imagine a lion supplied only with the molar teeth

* An attempt has been made by French Anatomists and Zoologists to show that insects and molluscous animals might be included within the same plan of structure as the vertebrates. It led to a very animated controversy, towards the close of Cuvier's life, between that eminent Philosopher, on the one hand, and Geoffroy St.-Hilaire, Latreille, etc., on the other. See Whewell's History of the Inductive Sciences, Book xvii. chap. vii. sec. 2, 3.

† Harris's Preadamite Earth, p. 272.

‡ Kant, as quoted in Whewell's Philosophy of the Inductive Sciences, vol. ii. ch. iii.

of an ox. Nothing but an entire reconstruction of the animal, in order to conform his other parts and organs to this new state of things, would enable him to live. His brain, his jaws, and the articulation of his jaws, the muscular development around the head and neck, the stomach and intestines, the legs and feet, must all be altered, and from a beast of prey he must be transformed into an ox that eateth hay.

Or, consider *two great divisions of animals* with respect to the food on which they subsist. Take the *carnivorous* tiger and compare him with the *herbivorous* quadrupeds. In the former, dependent for his subsistence on his cunning as well as strength, there is more occasion for brain, and hence the cranial cavity is of larger dimensions than in the cow or horse. The face is shorter, so that the power of the muscles which move the head may be advantageously applied. In the one case, the front teeth are strong and pointed, and by the scissors-like action of the jaw they are kept constantly sharp. In the other, they are few and small, but the surfaces of the grinding teeth are extended, are kept constantly rough by the alternation of bone and enamel, and act against each other with much of lateral motion. In the *carnivora*, the fossa in which the temporal muscle is imbedded is very large, and the muscle itself is attached to the jaw in such a manner as to apply the power most advantageously to the resistance. In the *herbivora*, the temporal fossa is comparatively small, no powerful biting motion being required, by the nature of the food or the mode of obtaining it. In the former, the spinous processes of the vertebræ of the back and neck are very strong and prominent, giving attachment to powerful muscles for raising the head, to enable the animal to carry off his prey. In the other, the corresponding muscles are powerful, in order to the raising and supporting of the head itself, which is heavy. The *carnivora*, needing both agility and strength, have the bones of their extremities disposed in such a manner as best to secure both; the joints having round sockets that admit both

of pronation and supination, and the foot being separated into toes, which are armed with retractile claws. The *herbivora* have extremities more solidly formed, with but little freedom of motion, the shoulder being scarcely more than a hinge-joint, and the toes being consolidated and inserted into a hoof, which is double or single, according as the animal ruminates or not. These contrasts might be extended to almost any length ; and they seem to show that one purpose has reigned throughout the construction of the whole of each animal, considered separately, just as their mutual resemblances show that both emanated from the same presiding Intelligence.

CHAPTER IV.

THE LIFE-POWER A WITNESS FOR DIVINE WISDOM.

Continued.

WE proceed now to examine the Wisdom of the Creator of living and organized beings by the light of the third criterion, which was laid down in the opening of the last chapter. We judge, it was said, of the *Wisdom*, as well as of the other attributes of an Intelligent Agent, by the *ends which He selects and by the means which He adopted for the attainment of those ends*.

What ends, then, are to be attained by the laws and operations of Life on the Earth? In endeavoring to answer this question, we would not forget the diffidence with which it always becomes us to express ourselves on such subjects. We cannot consider, properly, how much Science and experience have already done to enlarge and rectify our conceptions respecting the ends to be answered by organized beings, nor can we reflect, as we ought, on the narrow range, both of space and time, over which our intellects can expatiate (contrasted with the boundless realms ever present to the Intelligence of God), without feeling that when we speak of his purposes we should speak with modesty, and remember that the Most High is in heaven and we on the earth; our words, therefore, should be few.

But because we are unable to attain the knowledge of *all* God's purposes, it by no means follows that we must remain in ignorance of every one of them. This is the skeptic's error, and it stands in direct opposition to that of the presumptuous Dogmatist. The skeptic goes so far even as to

affirm that the fitness of means to produce certain ends is no proof that those ends were *intended*, no evidence that *mind* has been employed in preconceiving and preordaining the adjustment. Having examined this doctrine in previous parts of this work, we will only remark that the disposition to infer design from such adjustments is instinctive and irrepressible. It displays itself early and universally in untutored children. It extorts reluctant admissions even from sophisticated and unbelieving philosophy. Kant, though not an unbeliever, yet maintains, in his "Critique of the Pure Reason," that the being of a God cannot be demonstrated on grounds purely scientific, but only by an appeal to our moral nature. Still, when he comes to define organized bodies, he does it in the manner already quoted, and adds that, when we investigate their structure, we are obliged to assume, as indispensably necessary, this maxim, that in such a creature nothing is in *vain*, and to proceed upon it, in the same way in which, in general Natural Philosophy, we proceed upon the principle that *nothing happens by chance*.* So Cabanis, one of the skeptical Physiologists and Ideologists of France, after expressing his dislike to the Introduction of Final Causes into Physiology, candidly admits that "it is very difficult for the most cautious man never to have recourse to them in his explanations," and that in no case do the means employed appear so clearly, relative to the end, as "in the laws which preside and the circumstances of all kinds which concur in the reproduction of living races." It is the same with Bichat, another eminent writer of the same school. Noting the difference between the measure of sensibility possessed by the vegetative or vital organs of animals, and by their voluntary organs, he says, "No doubt it will be asked, *why* the organs of internal life have received from Nature an inferior degree of sensibility only, and why they do not transmit to the brain the impres-

* Kant. See Whewell's History of the Inductive Sciences.

sions they receive, while all the acts of animal life imply this transmission. The reason is simply this, that all the phenomena which establish our connections with surrounding objects *ought to be*, and are, in fact, under the influence of the will, while all those which serve for the purpose of assimilation only escape, and *ought* indeed to escape, such influence." It need hardly be said that, in this explanation, the author merely assigns what is usually called the *Final Cause*, and thereby implies, in the clearest manner, that in considering such facts we must refer for their origin to an Intelligent and Ordaining purpose.

The inference which is thus made intuitively alike by all—the untutored and the scientific—is an inference justified by our experience. Whenever, among results effected by human power, we discern means adapted to these results, we conclude there has been Intelligent Foresight and Design. The contrivances of insects have been appealed to, however, as proof that there may be adaptations of the most consummate perfection, when there has been no free personal intelligence, and that if we build our Theological arguments, therefore, on nothing but contrivances, we leave it to be inferred that the Wisdom of the Godhead is nothing but the instinctive workings of a blind adaptive power. We answer, that no one believes that a blind, unconscious, adaptive power produces such works as those of the bee or the ant. As the works of a being without self-consciousness, forecaste, or power of generalization and abstraction, they are perfectly inexplicable, and it is only when we assume that the insect is guided by an Intelligence infinitely higher than his own that we can reconcile his achievements to our intuitive convictions in respect to the relation between cause and effect.

FINAL CAUSES.

But again, the legitimacy of the religious inferences, which we found on adaptations in the organic world, seems to be indicated by the success with which the assumption of Design has been crowned. To that assumption we owe some of the most useful and brilliant of the recent discoveries in Physiology and Zoology. When Harvey, the discoverer of the double circulation of the blood, was asked by Sir Robert Boyle, "What induced him to think of the circulation of the blood," he replied, "When I took notice that the valves in the veins were so placed that they gave a free passage to the blood towards the heart, but opposed the passage of the venal blood the contrary way, *I was incited to imagine that so provident a cause as Nature had not placed so many valves without design*, and no design seemed more probable than that, since the blood could not well, because of the interposing valves, be sent by the veins to the limbs, it should be sent through the arteries and return through the veins, whose valves did not oppose its course that way." Here the preconceived idea of a Provident First Cause was the clue which guided the discoverer in drawing aside the veil which had hitherto obscured a portion of his works. It was the same with Cuvier. When the mutilated and incomplete fragments of a hundred skeletons, belonging to twenty sorts of animals, were placed before him, *pell-mell*, and it was required that each bone should be joined to that which it belonged to, how did he proceed? He went on the supposition—*first*, that animal forms have *some plan*, some purpose; and *secondly*, that that plan is intelligible, that purpose one that can be discovered,—at least in part. He assumed, further, that all the different parts of each being must be so co-ordinated as to render the total being possible, and, at the same time, fitted to attain the ends of its existence. Guided by the light of this familiar but yet (as applied by

him) novel principle, order was educed out of confusion. He was enabled to reconstruct and portray the forms of animals long since extinct, and of which he had only inconsiderable fragments in a fossil state. "I have no expression," he says,* "to describe the pleasure experienced in perceiving that, as I discovered one character, all the consequences, more or less foreseen of this character, were fully developed. The feet were conformable to what the teeth had announced, and the teeth to the feet; the bones of the legs and thighs, and everything that ought to *reunite* these two extreme parts, were conformable to each other. In one word, each of the species sprung up from one of its own elements." Whoever is acquainted with the discoveries of this eminent man, knows that they include many of the most important generalizations which Zoology now embraces, and it is hardly conceivable that a principle which conducted to such results can be otherwise than true.†

Recurring, then, to the argument from final causes as one not to be refuted, we are prepared to ask, what discoverable *ends* does the Creator seem to have proposed to Himself in the Constitution of living creatures? In attempting a reply to the inquiry, there are one or two suggestions which we feel bound to interpose. All speculations and conclusions in regard to the end, or *final cause* of organic structure, should be qualified, as we have already observed, with caution and with reverence.

1. *With Caution.* We are not to suppose because *we* have not discovered an adaptation that therefore there is none. It will require all the combined researches of all the physiologists of the world, protracted through successive ages, to

* Bakewell's Introduction to Geology, p. 235, 236.

† The teleology of Cuvier, and writers of his school, has received an important addition in the generalization of Professor Owen, respecting *Homologies*, furnished by a comparison of corresponding parts of different animals.

find out even a small part of the beneficent ends attained through the organization and functions of living creatures. Investigation, when thorough and properly conducted, rarely fails to rebuke the presumption of those who would hastily infer, in respect to any creature, that it is imperfectly formed. That was the opinion of Buffon, and other naturalists, in respect to the *Sloth*, and to animals of the same genus. "Attempts of Nature, in which she seems to have amused herself by producing something imperfect and grotesque," were the terms in which they thought proper to express their compassion for these ill-fated creatures. It was misplaced compassion. Travellers—especially Waterton—have carefully examined the habits and resources of this animal, and the conclusion is that, if we consider him with respect to his intended habitation and mode of life, the sloth is admirably formed. He was intended to obtain food and shelter from natural enemies among the branches of trees; and when we place him on the ground, and infer his malformation because he cannot run or fly, we proceed as wisely as we should if we inveighed against our own organization because we have no wings, or against that of a fish because he is helpless and wretched out of water.

Nor, on the other hand, because we can discover *some* ends attained, some plan preconceived and executed, are we to suppose that therefore we have discovered the whole. Our position before the great system of animated nature is that of a spectator before a veiled picture. Aided by those who have been before us, we can lift one and another part of the veil and gain a view of some portion of the figures beneath. We can infer from attitudes, coloring, lineaments of countenance, some of the passions and actions which the artist intended to express. But he only who surveys the majestic and harmonious whole can read or even conjecture the highest purposes proposed and attained. We therefore wait till larger and larger portions come into view, nothing doubting that at

every step we shall see a new significance, and that nobler and nobler conceptions of creative skill will break upon us.

Nor let it be supposed that there can be no final cause unless it bear on the happiness or welfare of *men*. Man, in his pride and self-confidence, is too prone to make himself the pivot on which all the Creator's plans must turn,—the central object towards which everything must converge. Let him remember that he is but one among unnumbered orders of beings, some ranging higher in the scale of intelligence, some lower, but all waiting on the bounty and needing the care of the one Father. None are too exalted to be above his sovereign control, none too lowly to be beneath his parental supervision. Wonder not, then, if this world of life about us has other uses than to subserve our comfort or well-being. Wonder not if angelic hosts, cherubim and seraphim, are to find here, in a far-off world, other objects for profitable contemplation or holy discipline or charitable ministration. Wonder not if groves have been made vocal even to please the senses of inferior animals, and floral and autumnal beauties scattered, with prodigal hand, where there is no human eye to see, nor human sense to be regaled, but where quadrupeds, birds, insects, and minute creatures may be present in countless numbers to enjoy, and, enjoying, to proclaim a sentiment other and more Christian than the poet's—

“Full many a flower is born to blush unseen,
And waste its sweetness on the desert air.”

There is no desert air where God's immensity dwells. Though his own were the only Presence which cheers some distant solitude, it would still justify the working of ever-renewed wonders in the organic world.

2. We suggest, further, that when we address ourselves to the study of final causes we should strive to do it in a *reverent* and *religious* spirit. We should strive to carry our view beyond the mere adjustments before us to the ever-present ad-

justing Mind. We should beware lest, becoming too much engrossed in the contemplation of the thing formed, we forget Him that formed it. In every object which emanated from the Creator's hand, especially in every living organized object, we should behold a Representative of his Eternal Power, and a transparent medium through which we can read the manifold Wisdom and Goodness of Him in whom all live. How easy it is for us to impart opacity to beings and objects which God has constituted to be transparent! How perversely bent, as it might seem, men are to obscure those clear revelations, those expressive vestiges and footprints, which the Creator has everywhere left behind Him! When we yield to that propensity, so mournful and malign, we gain from the survey of living creatures, from the study of Natural History, only an earthly, sensual Wisdom. If we would render it to our minds the source of that true Wisdom which comes from above, and which at once clarifies the understanding and purifies the heart, we should go to it with all our religious instincts in vigorous action. We should go with the desire, earnest and active, that with unfolding knowledge there may spring up ever-growing conceptions of Infinite Power and Goodness. Then shall that delightful study be more than a companion for our solitude, more than a relief from ennui, or a solace under the unavoidable calamities of life. It shall do more than extend our natural knowledge: it shall strengthen our moral convictions. It shall more than beguile the tedious hours of some protracted journey. It shall point us ever onwards and upwards towards the Traveller's Eternal Rest. It shall declare—

“ For what the Eternal Maker has ordained
The powers of man; we'll feel within ourselves
His energy divine; He'll tell the heart
He meant, He made us to behold and love
What He beholds and loves, *the general orb*
Of life and being; to be great like Him,
Beneficent and active. Thus the men

Whom Nature's works can charm, with God Himself
 Hold converse; grow familiar, day by day,
 With His conceptions; act upon His plan,
 And form to *His*, the relish of their souls."

The question, then, recurs, what ends has the Creator in view in the constitution of living creatures? To some (plants) He has given only life. To others (animals) He has given, besides life, susceptibility to pleasure and pain, and the power of voluntary motion. To a third class (men) He has given not only life and sensibility, but also reason, taken in its true and highest sense, as including the perception both of general truths and of moral distinctions. All organic beings agree in possessing life; to animals has been given the further prerogative of feeling and voluntary motion; to man the yet further prerogative of rational thought.

Wherever there is life, it may be assumed that it has its office, and therefore its value. Hence the *maintenance of Life* must be (1) *one end* proposed by the Creator. By considering some of the *means* which He employs for the purpose we shall be able to judge of his *Wisdom*.

To beings who have capacity for *enjoyment* and *suffering*, it must be pleasant to possess the former and escape the other. Here, then, is (2) *another end*, and by the manner in which it is advanced in the Economy of living creatures we can judge both of the *Wisdom* and of the *Benevolence* of God.

To rational and moral Beings like men, enjoyment is desirable, and that also which is higher than mere enjoyment,—true welfare. Hence, by considering the provisions which the Creator has introduced into the laws of life for promoting this twofold object, we can judge of *his Wisdom, his Benevolence, and his Holiness*.

In thus speaking of Power, Wisdom, and Holiness as distinct attributes of God, we yield to a necessity created by the weakness of our own faculties, rather than set forth a substantive truth. In proportion as our conceptions of the Creator's

perfections rise, in the same proportion we shall feel that, in every act of his, all his attributes, both natural and moral, must take part. Power is evidently implied in every efficient act of Wisdom. Both Wisdom and Power are necessary to every effectual effort of Benevolence, and in a Sovereign, or Father, we can hardly conceive of a perfect righteousness which has not been tempered by Mercy, guided by Wisdom, and upheld and vindicated by Power.

DIVINE WISDOM INDICATED IN MEANS FOR UPHOLDING LIFE IN PLANTS.

The *maintenance of Life*, then, is the first *end* which we are to consider, and we are to inquire how far the appointed means indicate Wisdom. We shall confine our illustrations to the vegetable world, not because they are the most striking, but because, in this respect, they are directly expressive of Wisdom only. When we come, under the next head, to set forth the Benevolence of God, none of our examples can be derived immediately from that source.

Look (*a*) at the provisions for protecting the individual plant during its allotted period; (*b*) at the provisions for securing an unbroken succession of plants of the same species; (*c*) at the reciprocal agency of different tribes of plants, and also (*d*) of plants and animals.

(*a*) Let us trace the plant from the moment of its germination. The opening germ finds itself imbedded in precisely that substance (forming a large part of every seed) which constitutes its appropriate nourishment. It is necessary, further, that the rising plant be firmly rooted and anchored in the soil. Therefore, this opening germ puts forth a radicle, which pushes downwards, forming a deep foundation in the earth. This plant again must derive its aliment in part from the soil; therefore it puts forth in every direction its delicate root-fibres, which spread themselves like a net over all the nutritious

matter in the adjacent ground; and these root-fibres are provided with an apparatus for selecting and absorbing that only which will be appropriate to the particular plant in question. Again, not only must this plant sustain relations to the ground; other and not less important relations it must sustain to the air, to sunlight, to moisture. Hence, while its radicle pushes downwards, its plumule, or incipient stem, presses upwards, protected, perchance, by two fleshy lobes (cotyledons), which close over it like a helmet and visor, and enable it to encounter unharmed the resistance of the hard incumbent earth. Ushered into the air and light, it retains these same lobes (for a time) as leaves, or as covering against frost; or it is supplied for that purpose with protecting spines, which arrest the congealing vapor. Its texture is such that it bends before the fierce blast, and, as its tender buds appear, the leaves gather about them hard scales, exuding, perhaps, some resinous or gummy matter; or these buds may clothe themselves in a deep covering of wool.

Or, look at the *leaves* themselves. They perform the office of the lung and stomach in animals, and with what amazing precision and simplicity! To the naked eye they appear but flat plates of cellular tissue traversed by veins. Very different do they seem when seen through the microscope. They are to evaporate water, to expire oxygen, and inspire carbonic acid. To prevent their being disqualified for this office by atmospheric vicissitudes, from being parched in dry weather and surcharged with moisture in wet, they are inclosed in a cuticle "scarcely pervious to either air or moisture; and in this cuticle are placed many mouths (called stomata), which have the power of opening and closing (according to the state of the atmosphere or of the leaf itself), to regulate the absorption or respiration of either water or air. And, in order to expose the tissue lying beneath this cuticle to the greatest possible atmospheric influence, the leaf is not a solid mass, as it appears to be, but is traversed in all directions by passages

terminating in the mouths and opening into cavities, where the air both of absorption and exhalation can freely circulate and pass in or out so long as the mouths permit. Nor is this all. Many leaves are constantly submerged in water, where they are free from atmospheric vicissitudes, and can neither absorb carbonic acid from the air nor discharge oxygen into it. It is therefore obvious that the curious provision that has been made for the regulation of aerial leaves would be useless in submerged ones, and, accordingly, we find that the latter have neither cuticle, nor mouths, nor cavernous parenchyma, but are thin, solid plates, the whole surface of whose cellular substance is in direct contact with the water, from the air contained in which the leaves must exclusively derive their nutriment.*

(b) From the means of *self-preservation*, with which the plant is provided, turn to its apparatus for *reproduction*,—for propagating other individuals of its own species. We have already seen how creative foresight is employed in preparing a plant for the exhaustive process of seed-bearing, and what multitudes of plants, expending all their energies in the process, die immediately after. The stamens and pistils, which must co-operate in the act of fecundation, are separate organs, situated sometimes on the same flower, sometimes on different flowers on the same plant, and sometimes on different plants. For the various means† by which the pollen of the one is brought in contact with the germ of the other, we must refer to works on Vegetable Physiology. No one can examine them without being filled with amazement at the boundless fertility of resource and the precise adaptations which they exhibit. The seed, when finally perfected, is, in its structure, in its position, and in the provisions made for its dispersion,

* Lindley.

† One of these means is the agency of insects, like the bee, which, in passing from flower to flower, carries with it the fertilizing dust.

an impressive monument of Divine Wisdom. It is protected from injury in some cases (cocoanut, hickory-nut, etc.) by an extremely hard covering; in others (peas, beans, etc.), by a strong leguminous capsule; in others, by being imbedded in the pulp of rich fruit, that is eaten by animals, in which case the seed is usually made impervious to the action of the gastric juice.

Consider the manifold ways in which seeds having no voluntary powers of locomotion are dispersed over the earth! In one class, such as balsam and catch-fly, we find *elastic springs* attached to the seed-vessels, which open with such force that the seed is projected to a distance. In many of these (puff-balls, for example), which burst at the top like the crater of a volcano, the seed is so fine and so abundant that it is scattered abroad by the air like a volume of smoke. In other and heavier kinds, *air*, also, is the great agent of dissemination. The elm-seed is furnished with a circular and membranous wing, on which it floats like a bird; the maple-seed has two large side-wings; the thistle and dandelion a feathery crown or tuft, which may be compared to the parachute of a balloon, except that it answers the double purpose of lifting the seed from the involucre (by the drying and distending of its constituent threads) and of so buoying it up that it is said to have floated from Africa to Spain, and (as Linnaeus thinks), in one instance, from America to Europe (*Canadensis Erigeron*). Water is also unceasingly active in this work. Many seeds have water-tight capsules, and it is said that the cocoanut has floated from the West Indies to Norway. Every flowing river and running brook goes freighted, at certain seasons, with these depositaries of life. So it is with descending rain, which is useful in carrying seed into crevices of the earth. But, perhaps, more important than all is the agency of animals and men. The seeds of more than fifty genera of clover, goose-grass, etc. are armed with small hooks, by which they lay hold of the fleeces of sheep, the hair of other ani-

mals, the clothes of men, and are thus transported far from the parent plant. The stomach of animals supplies a vehicle for still greater numbers. Manure a field with animal dung, and an immense harvest of grasses and weeds springs up. Seeds, again, are surrounded with fruit, or they are themselves fitted to be the aliment of birds and mammalia, that thus they may gain a lodgment where the means of transportation are never wanting. At one time the Dutch, in order to secure a monopoly of the trade in nutmegs, extirpated that plant from several of their islands in the East Indies; but these islands were soon restocked, through the agency of birds. In their annual migrations towards the North and South, these animals become, in the countries they traverse, the agents of a most extensive intermixture of seeds that belong to tropical, temperate, and frigid regions; and probably nothing but a change of climate is necessary, in our own latitude, to cover our fields with a tropical or arctic vegetation.

(c) Still more impressive are the provisions for sustaining vegetable life, which are found in the reciprocal agency of separate plants. The higher plants employ those of ruder structure, as pioneers to prepare the soil for their support. Thus, lichens take root on the surface of rocks, abstracting nutriment from the surrounding air, and depositing it as soil by their decay until, at length, mosses take their place, and carry forward the slow but sure process till the appointed time, when they, in their turn, retire and make way for shrubs and trees. On sandy beaches, where not even the lichen could get footing, some of the grasses with turfy roots contrive to gain a lodgment and spread till they cover what was before a drifting surface with a rude vegetation; and this last is soon succeeded by superior plants. At the bottom of lakes and ponds, aquatic plants, by their alternate growth and decay, deposit layer after layer of soil until the water is drained off. Large marshes, such as the Hyrcanian forest, have been filled up by the agency of the gray moss, and desert wastes have

been transformed into fruitful fields simply through the instrumentality of *weeds*. "The veriest weeds," says Dr. Darlington, "may be the instruments of a wise Providence for collecting fertilizing principles from every falling shower or passing breeze, and imparting them in turn to the soil, in which they are finally decomposed."

"All the plants of a given country," says De Candolle, "are at war with one another." There is a struggle for its exclusive possession between the earlier and later comers; between the more hardy or lasting and those less so; between those more prolific and those whose species multiply slowly. The result may be that one class monopolize the ground, but their victory is only for a season. Gradually they abstract from the soil those elements most essential to their own support, while they at the same time enrich it for plants of another family. Hence the rotation of trees which we observe on cutting off timber. The forest of oaks is replaced, perhaps, by a forest of pines. Man's convertible husbandry is but an humble imitation of his Creator.

(d) But not only is there a mutual adaptation *between different tribes of plants*: there is adaptation not less striking *between plants and animals*. Some plants are indebted to animals for protection, some for fecundation, and some for a check upon their excessive luxuriance. The tobacco-plant would often be destroyed by insects but for turkeys, which the planter keeps to feed upon them. The defensive agency of the turkey, in this instance, is but a specimen of a most extensive interposition on the part of birds in favor of plants against insects. "Birds," says Lyell, "which feed indiscriminately on insects and plants, are perhaps more instrumental than any other of the terrestrial tribes in preserving a constant equilibrium between the relative numbers of different classes of animals and vegetables. If insects become very numerous and devour the plants, these birds will immediately derive a large portion of their subsistence from insects, just as

the Arabians, Syrians, and Hottentots feed on locusts when the locusts devour their crops."

On the other hand, are plants of any species likely to multiply to the exclusion of others? Those plants have allotted to them an appropriate insect to curb their luxuriance. Thus, there are no less than fifty species of insects which, according to Linnæus, prey upon the nettle,—a plant so prolific that it would otherwise overrun our fields. Grass is kept down by the *Phalæna graminis*, "but for whose agency," says Wilcke, "it would destroy a great number of species of vegetables, of which the equilibrium is thus kept up. Lest, however, the insects assigned to a plant be too destructive, they are in their turn preyed upon by other insects. Thus the *Ichneumon strobilinos* lays its eggs in the caterpillar, which preys upon the fir cone, inserting its long tail in the opening of the cone till it touches the included insect, for its body is too large to enter."

We ask special attention to these facts, because they exhibit adaptations between substances naturally independent and separate. When the adjustment is between parts of the same organized structure, it may be alleged that there is a necessary connection, and that one rises spontaneously out of the other. Hardly any one, however, will venture to allege this of beings so entirely independent as different orders of plants, much less of cases in which the adjustment is between an order of plants as chief and an order of animals as subsidiary.

CHAPTER V.

THE LIFE-POWER WITNESSING TO DIVINE BENEVOLENCE.

WE come now to the *promotion of enjoyment*, as well as *to the maintenance of Life*,—these being joint ends which the Creator seems to propose to Himself in the constitution and economy of *animals*. From animals, therefore, we shall derive our examples, and we shall direct them to the illustration of two facts,—1. That as plants are dependent on animals for protection, fecundation, etc., so animals are dependent on plants for nutriment and enjoyment. 2. That one class of animals is, in like manner and for the same objects, dependent on another or other classes of animals.

1. The general dependence of animals on vegetables for subsistence has been noticed already. Since no known animal can subsist directly on inorganic matters, it is plain there must be purveyors for these substances. Plants are the menstrua in which these inorganic substances are reduced and transformed and made meet for animal consumption. But what shall guide animals in selecting from the vast range of plants? Some feed on several different kinds, others confine themselves to a single species, and in both cases we find that there is a wonderful conformity between the organization of the animal, its instincts, and its appropriate food. In its wild state it selects with intuitive accuracy that which is salubrious and shuns that which is poisonous. What one seizes with avidity as food, another as carefully shuns; for that which to one is life and health is to another disease and death. Thus, the goat shuns the baneberry (aconite), but eats water-hem-

lock with impunity; while the horse can feed with safety on the former but is poisoned by the latter.* And it is most worthy of remark that wherever the Creator has assigned a habitation to a particular class of animals, there will be found growing the plants on which they can best subsist and thrive. For example, the ruminating animals prevail generally over the globe, except in New Holland; and the grasses, their appropriate food, grow wherever they prevail, but are wanting in that island. The quadrupeds (monkeys, etc.) are confined to the tropical regions of Africa and America, and it is in the same districts that we find the palm-tree, so useful to that tribe; but, as if to demonstrate that the connection is not necessitated, there is one spot (New Holland) where we find palms but no monkeys.

Consider, also, the adaptation of the animal structure to the manner in which the food is to be obtained. Is the goat to browse on the edge of precipices, he has a hoof and legs that enable him to climb and step with perfect firmness and precision. Is the reindeer to get its subsistence from the lichens and mosses that lie deep beneath the snow, he is provided with a branch to his antlers well fitted to remove that covering; and, what is wonderful, the female deer is provided with this appendage only in polar regions. Is the camel, "that ship of the desert," as he is called with such beautiful significance in Eastern countries, is he to make long marches, where there is nothing but a waste of sand, he has a broad hoof like a snow-shoe, covered with an elastic cushion, and also an articulated disposition of bones in the leg precisely fitted for his work; he has nostrils which are little more than long narrow slits, supplied at the orifices with a sphincter muscle to close them at pleasure, with surrounding rings of hair,—all enabling him to exclude the sand from these organs. He has attached to his main stomach a series of cells, into which he

* Smellie's Philosophy, p. 147. Boston, 1843.

can introduce water enough to serve him for several days, keeping it apart from the other contents of the stomach. In the hump or humps on his back, he has a reservoir of fat, which is stored away by him when he is in fertile pastures, and on which he draws, after the manner of the bear, when he is oppressed with hunger. Can we meditate on instances of adaptation like this, where the adjustment is between objects so disconnected and dissimilar,—between precipices and the legs and feet of an animal,—between the drifting sands of the desert and the foot or stomach of a camel, and yet not feel that wondrous wisdom must have contrived, and a power not less wondrous must have arranged, them? In the case of the camel, let it be observed, that when one of the same genus (*camelidæ*), as, for example, the *Llama* of Peru, is to live amidst rocks and mountain-passes, his hoof, instead of being broad, is made narrow, and curved at the outer rim, somewhat like claws. The purpose here is too apparent to be disputed. Observe further, too, that the common camel and dromedary are never found on islands or continents where there are no extended plains.

But these prospective contrivances reach beyond the subsistence of the animal itself. They provide for the progeny which are to appear after the parent is no longer living. Take the butterfly, for instance. This insect is born an orphan, and dies childless. It never saw those who gave it birth; it can never see those who are to spring from its own body. Its last act in life is to deposit its eggs. And where does it go for the purpose? Not to the plants from which it has been accustomed to extract the juices that are its own food. No; it goes to that one plant which alone has leaves fitted to subsist its larvae, when, at the opening of the next spring, they shall burst their shells. It goes, too, to that part of the plant which will be likely to prove faithful to the trust,—not to a new and tender shoot, which may be nipped by the frost or broken by the wind, but to one of the oldest and strongest of the branches.

It selects that shrub, too, whose leaves will be sure to open just before its eggs are hatched. As there are different kinds of butterflies, whose larvæ are produced at different intervals, so there is, in each case, an appropriate plant. The larvæ are neither born before the leaves spring forth, nor so long after as to find them hard and tough. And what is true of butterflies is true, also, of other insects. "Every plant has its guest to lodge and nourish." "Nature has reserved a species of plants for each species of insect."

In the example just given, the plant is passive, and the insect performs the principal part of the labor. It is not always so. Look at the bark-puncturing insects. With their boring-instruments they perforate a place of deposit for their eggs, and forthwith a change takes place in the *vegetative* process. The wood enlarges around the egg; a cell is thus prepared for the insect; and this work, which is often completed within two or three days, is always the same for the same species. No other instrument than that which this insect can apply will lead to any such result. Does it not show that in the constitution of the plant itself provision has been made for the securing and perpetuating of these insects?

Before closing this notice of the reciprocal adaptations between plants and animals in respect to the subsistence and reproduction of the latter, we ask attention to the *benevolence* which they indicate. Life might be maintained among animals as among vegetables,—without sensation, and, of course, without pleasure. But wherever the Creator gives susceptibilities to enjoyment, He gives, also, means for their exercise and gratification. Thus, eating is attended with pleasure over and above that which would suffice to keep the animal from starving. Pleasure is attached to all those acts which carry it forth in perpetual search of food. Motion, sunshine, sweet odors, melodious sounds, brilliant colors, all seem to have their charms for the orders of inferior being. "The properties peculiar to each plant are but adaptations to creatures that can

enjoy them. The scent, the form, the color of every flower and every leaf, and probably, also, of the very particles of earth that may be scattered by the wind, and even the various sands washed by the boundless sea, are all in keeping with the senses and the appetites and the habits of different living beings. From the mammoth to the mite, from the iguanodon to the minutest animalcule, the hand of the Almighty has equally provided for every want. The order which has been most productive of life has been that which has been most productive of the means of maintaining life delightfully; for, though a malediction has been visibly written on the soil of the earth, yet even now the goodness which at first overflowed from the Maker of worlds as He contemplated his works, still appears so *exuberant* that our ideas of Omnipotence must be enlarged and exalted by Himself before we can believe in the possibility of benevolence greater than is here demonstrated."*

2. As some animals are dependent on plants for their enjoyment and subsistence, so in others there is a mutual dependence and adaptation between different classes of animals or between different individuals of the same class. Animalcules afford food to superior animals. The common scallops, as well as other mollusks, feed on infusoria, and their stomachs often contain thousands of shells which, being siliceous, have resisted the process of digestion.† From a paper recently read by Dr. Knox before the British Association for the Advancement of Science, it appeared that the Vendace, a fish well known in some of the Lakes of Scotland, derives its subsistence entirely from one species of infusoria, and that the same species, probably, constitute the food of the Herring. As we ascend to the higher orders, we find that the same principle is carried out among insects, reptiles, birds, mammalia.

* Moore's Use of the Body in Relation to the Mind, p. 149. London, 1846.

† Mantell on Animalcules, p. 103.

In most cases the inferior animal contributes to the nourishment of the superior by yielding up its life; in others, however, it employs its living powers in contributing to his enjoyment and support. Thus the aphides suck sweet juices from plants and disgorge them into the mouths of ants, whence they were termed by Linnæus the *milch-kine* of ants. Ants, also, have numbers of their own species that they seem to have reduced to slavery, and that are termed by Huber their *negroes*, because they are constantly busied in laborious and servile offices for the benefit of their masters. So with all the animals (the beaver, bee, etc.) that form what are called *proper societies*. There is mutual co-operation, which has a direct and most striking tendency to promote the welfare and happiness of the community. Even in the pairing of birds we have an example of mutual co-operation, since in general the males and females assist each other in building nests and feeding their young.

"We here perceive design, because we trace adaptation. But we at the same time trace *Benevolent* design, because we perceive gratuitous and supererogatory enjoyment bestowed. See the care with which animals of all kinds are attended from their birth. The mother's instinct is not more certainly the means of securing and providing for her young than her gratification in the act of maternal care is great and is also needless for making her perform that duty. The grove is not made vocal during pairing and incubation, in order to secure the laying or the hatching of eggs; for if it were as still as the grave, or were filled with the most discordant croaking, the process would be as well performed." "But thus it is, that Nature is gratuitously kind; she not only prefers inducement to threat or compulsion, but she adds more gratification than is necessary to make the creature obey her calls."*

* Lord Brougham's Illustrations of Paley, etc., vol. ii. p. 66.

THE SYSTEM OF PREY—DOES IT COMPROMISE THE BENEVOLENCE OF GOD?

But where is the Benevolence, it may be said, in making one animal extract its sustenance from the sufferings and death of another? Look at this system of warfare and remorseless prey which pervades the animal tribes. Can we regard this as any emanation of Benevolence? We reply, that he who adjudges it to be irreconcilable with the goodness of the Creator, thereby binds himself to take no share in it; he cannot innocently be a party to that which his moral nature condemns. It becomes him, then, to reject all animal food, to use no article of raiment which in its texture or color has been derived from dead animals, and to banish alike from his parlor, his sleeping-rooms, and medicine-chest whatever can be traced to the same source. If he plead the grant made to Noah of the flesh of animals to be food for men, we answer that *that* grant in *his* favor is scarcely more explicit than the one which the Creator made to the Lion, the Tiger, the Panther, when He organized them with none but incisor teeth, a simple stomach, and an irrepressible thirst for prey. If he alleges the fact revealed by the microscope, that even our vegetable food is covered by animals of exceeding minuteness, which are nevertheless organized, and that abstinence from all flesh being thus rendered impossible, he is an involuntary though protesting party to the system of prey and death. We answer,—

First. That we can know but in part, and that though our present knowledge and power of comprehension may be unequal to the office of vindicating this system, it may, none the less, be a wise and good system.

Secondly. That in human affairs suffering always stands justified when it is a necessary means to the attainment of a greater good. (*E.g.* Surgical operations, Labor in quest of gain, etc.)

Thirdly. That he who inflicts or permits the suffering gives incontestable evidence of his kindness, if he seem anxious to secure the greatest return of enjoyment at the least expense of pain.

If the last two of these principles be applied to the system of prey and death among inferior animals, we shall not be left without some means of reconciling it with the goodness of the Creator. We shall find that the aggregate amount of enjoyment has probably been thereby augmented, inasmuch as the whole number of sentient animals, as compared with the whole number of plants on the globe, has been greatly increased. Were all carnivorous animals to become herbivorous, the annual plant-harvest of the globe would be totally inadequate to the support even of terrestrial animals, while fish must cease to exist. By the present arrangement, the privileges of sentient and animal existence are extended to a large portion of food, which must otherwise have been without those privileges. It rejoices in sensation and motion till it is wanted to maintain the same functions in other and higher organisms, and then, though the individual die the race still lives. The stream is unbroken; and when we compare the enjoyment of a succession of individuals coming into life, full of the animation of opening existence, delighting in the offices that pertain to the propagation of their kind, we may well doubt whether, with all the reduction which must be placed to the account of suffering and death, they have not a greater aggregate of pleasure than could have been the lot of a solitary individual, even though his life had been coextensive with that of all the race.

In respect to the sufferings incident to the life and death of animals, we may remark that, in our own experience, pleasures are heightened by their contrast with pain, and hence that all susceptibility to suffering is not necessarily an evil. We remark further that it is by no means certain that beings endowed, like animals, with the power of voluntary locomotion,

and destined to procure their own subsistence, and with it their own enjoyment, could have been created with a capacity for pleasure only, independent of all susceptibility to pain. The one seems to be the necessary alternative of the other.

Again, observe that the suffering seems to have been carefully economized,—the animal being liable to so much as shall serve to guard him against danger and to no more. For example, the superficial nerves—those spread over the exterior parts of bodies and organs—are much more sensitive than those lying far within. A nerve of sense, again, is sensitive only to impressions from *one* class of objects, as the eye to light, the ear to sound. Bones can be cut or sawed without giving pain; it is only when they are in danger of being fractured—the great danger to which bones are exposed in the living animal—that pain gives us warning. In like manner ligaments and tendons can be cut, pierced, burned, without suffering; it is only when they are strained that the nerves give us monitory intimation. Could that Being have been careless of the suffering of his creatures who organized the eye,—that instrument which in every animal seems so nicely adapted to its specific wants,—which is provided with so much apparatus for cleansing, moistening, and defence; and the nerve of which has been supplied with precisely that measure of sensibility which enables it to fulfill its appointed functions with the least pain? Add but a grain to the sensitiveness of the optic nerve, derange but one of the numberless ducts or membranes or muscles or blood-vessels that go to make up the organ, and vision, ordinarily a source only of pleasure, becomes the occasion of anguish.

But these are not the only provisions which the Creator has made for reducing and economizing the pain occasioned to animals by death. In the *first* place, they are not burdened by that oppressive consciousness of guilt which often serves to shroud man's future in gloom, and to render departure from life a fearful change. In the *second* place, they have none but

the most limited capacity (if any) for foreseeing this catastrophe, and are not, therefore, like man, kept in bondage all their life long by the fear of coming dissolution. In the *third* place, they are not often bound to offspring, parents, or companions by permanent ties, the rupturing of which must be alike to those who depart and those that survive the occasion of bitterness. In the *fourth* place, they have none of the restless, aspiring sentiments that make life, to man, one long and anxious fever-fit, and that precipitate him on death at last with a violent recoil. And in the *last* place, it is well worthy of remark, that where one animal falls a prey to another, the sufferings seem to be carefully abridged:—1. The victim is always killed before being devoured. 2. It is attacked, generally, at the most vulnerable point, where death can be inflicted in the shortest space of time and with the least pain. The carotid arteries, and that point on the spinal column, near the base of the skull, where a single blow ends life, are the most frequently-chosen places of attack; and is it not also most remarkable, that this point, known to man only by experiment and investigation, is intuitively known by animals?

Consider, on the other hand, the provisions which have been made for the *enjoyment* of animals that fall at last a prey to others. The herbaceous animals, and the inferior carnivora, are generally distinguished for their apparent comfort. A large portion of their allotted term of life is passed in freedom from disease, and in the contented enjoyment of all their instincts. Their lives may be compared to those of healthy, happy children-lives, of prevailing sunshine, with now and then a passing cloud. There seems little reason to doubt that they can derive exquisite sensual pleasure from the colors, odors, sounds, and movements with which a bountiful Creator has encompassed them. Their susceptibility to music may be taken as an example. “Sir W. Jones* testifies to the credibility of

* Moore's *Uses of Body in Relation to Mind*, p. 180.

the story, that while a lutenist was playing before a large company in a grove near Schiraz, the nightingales vied with the musician until they dropped on the ground in a kind of ecstasy, from which they were roused by a change in the music. An officer, confined in the Bastile, found himself surrounded by hundreds of musical amateurs, in the form of mice and spiders, whenever he played on his lute. In the East persons are employed to rid houses of venomous snakes by causing them to come out of their holes at the sound of a lute. The Negroes catch lizards by whistling a tune to them."

With this high susceptibility to pleasure may be combined comparative insensibility to pain. A medical and physiological writer remarks, "All creatures purely instinctive, such as insects, appear to me to be incapable of positive pain, but abundantly endowed with the capacity of pleasure. Their every action results from direct impression, so as always to be accompanied by a feeling of enjoyment, or a sense of doing what is desired,—the desire, the action, and the exciting cause of the action being connected without interval and without comparison. Thus, an insect, although cut in two, will seize its food with avidity."^{*} That such an organization is not impossible, may be made apparent from the following fact: A person wishing to have a tooth extracted, takes a dose of sulphuric ether. The effect is a general exaltation of his nervous system, so that he feels an extraordinary sense of physical and mental vigor, and an almost irrepressible desire to exert his powers. At the same time, his sensibility to pain is so much diminished that, though he sees the dentist open his mouth, apply the instrument, and remove the tooth, he is entirely unconscious of pain, and the tooth is extracted without any sense of suffering. Suppose the temporary state thus induced in man by artificial means were the permanent state of insect life. Entire insensibility to suffering would probably

* Moore's *Uses, etc.*, p. 62.

not ensue, but it is evident that the amount endured would be trifling, while the percipient powers and the sense of enjoyment might remain unimpaired.

Thus far, in considering the alleviations and compensations which distinguish the system of prey among inferior animals, we have omitted all reference to the advantages which accrue to man from the power he exercises over their lives. These belong to the following head. Thus far we have confined our attention to plants and to animals inferior to man, and we have considered their adaptations only in respect to inorganic nature, and to such relations as subsist between different departments of Organic Life. We have seen that both plants and animals are adapted, with multifarious and unfailing wisdom, to the constitution of the air, light, water, earth, etc. We have seen, also, that there are striking natural adjustments between the animal and vegetable kingdom, taken as a whole; between different classes of vegetables, each to the other; between corresponding classes of vegetables and animals, and between different classes of animals. In all these adaptations we have considered man merely as a spectator. We have examined the provisions made, both among vegetables and among animals, for the maintenance of life, and we have beheld in them most striking indications of the manifold *wisdom* of God. We have considered, also, the arrangements made among the inferior orders of sentient existence for the promotion of *enjoyment*; and in these provisions we have seen impressive proof of the vigilant **KINDNESS AND BENIGNITY** of Him whose mercy is over all his works. We have endeavored to sketch some of the impressions and convictions which must have forced themselves on man, if, instead of being a tenant in common with countless inferior beings of this broad earth, he were only a transient visitor; and it would seem that he could not well have resisted the conclusion that it was a world created and governed by unbounded Wisdom, Power, and Benevolence. These conclusions, however, must be greatly

strengthened if we consider man as occupying his appointed place, and receiving, as well through the agency of inferior creatures as through the economy of his own nature, contributions to his happiness. In these contributions the Almighty gives us a view of his *Holiness*, as well as of his *Goodness*, *Wisdom*, and *Power*.

CHAPTER VI.

THE LIFE-POWER A WITNESS FOR ALL DIVINE PERFECTION.

MAN'S welfare promoted through the agency of inferior creatures is, then, the topic for discussion under the class of adaptations now to be considered.

Inferior creatures (plants and animals) have been so constituted as to be bountiful contributors to (a) *Man's Physical Enjoyment*; (b) to his *Mental Development*; (c) to his *Moral Discipline*; (d) to his *Social and Political Welfare*.

(a) To his *Physical Enjoyment*. What an immense proportion of our material enjoyments are derived from the organic world,—from plants and animals! All our food, if we except water, all our raiment, the larger part of our furniture and implements, and all that part of our edifices which comes into nearest contact with us, is derived from this source. Shut out from it, man would be unable to exist; permitted to use it, he need fix no bounds to his physical resources and enjoyments. There seems to be hardly a plant or animal on the globe which may not be made to subserve man's convenience or safety. Plants which are poisonous to him when in health have remedial power over his diseases. Substances the most unnoticed, and apparently the most insignificant, acquire, with the progress of knowledge, an unexpected, and often an almost unlimited, value. From the seaweed that floats to the beach, or the hyssop that springs out of the wall, up to the proudest monarch of the forest, there are few which, besides subsisting their appropriate insect or bird, do not also (or may not) minister to the necessities or comforts of man. The sea-weed yields kelp, etc.; the colchicum affords two or three distinct

medicines; the acorn, roasted, has been converted into an agreeable substitute for coffee; and bread, not unpalatable, and far from innutritious, has been made out of sawdust.

If we turn to the animal world it is the same. Insects are immense contributors to man's safety and comfort, not only by destroying the plants that would otherwise overrun his fields, or by feeding on the carrion that might taint his air, but also by the uses to which they can be applied after death. More than a million of dollars is said to be paid out annually by England for the cochineal,—an insect used in dyeing. More than two millions of human beings are supposed to derive their employment and subsistence from the product of the silk-worm. The Spanish-fly, or *Cantharides*, used in medicine; gallnuts, which are occasioned by the sting of insects, and are used in dyeing and making ink; the honey and wax obtained from bees are other examples of the manner in which animals, even after their term of life is ended, can be applied to man's service.

Not only is it likely that almost every organized plant and animal can be made directly subservient to human welfare, we find that the most various uses can be found for the same plant or animal. Take, for example, the great Mexican *Aloe* or *Agave*. The sap fermented forms a beverage; "the fibres of its leaves make a coarse kind of thread; the dried flowering stems are an almost imperishable thatch; an extract of the leaves is made into balls which will lather water like soap; the fresh leaves themselves cut into slices are occasionally given to cattle; and finally, the centre of the flowering, split longitudinally, is by no means a bad substitute for a European razor-strap, owing to minute particles of silica forming one of its constituents."

Take even one part of such a being, a homogeneous substance like gum-elastic, or *caoutchouc*. It is the inspissated juice of several varieties of tree growing in South America. Forty years since it was applied to but one purpose, that of

effacing pencil or crayon marks from paper. How manifold the applications of it to human convenience and comfort which have been discovered during that brief space of time! It is now manufactured into shoes and boots, into cloth, into carriage-tops, into life-preservers, into gaiters, suspenders, and almost every article of wearing apparel; into travelling-bags, into bands for transmitting motion in machinery, into door-springs, into elastic-holders for paper, etc. In making it impervious to water, and elastic, as well as flexible, the Creator seems to have rendered it capable of supplying an almost infinite number of human wants.

The *animal* world is full of examples of the same kind. Take the Reindeer of the Arctic regions, or the Camel of sandy deserts, already referred to. How manifold are the uses to which they can be applied as well after they are dead as during life! Or take the domestic cow as an example. After supplying us while alive with milk, butter, cheese, manure, and serving to replenish our herds, she becomes when dead an object of desire to a dozen different tradesmen, because she can contribute to supply more than that number of human wants. The butcher, the tallow-chandler, the soap-boiler, the glue-manufacturer, the tanner, the trunk and harness-maker, the maker of shoes and boots, of combs and lanterns, of neat's-foot oil, of bone-dust for manure, all find value in the carcass of the fattened ox or cow, thus showing how manifold are the different substances and uses which can be extracted out of the same organized being.

And man's wants, be it observed, are ever varying and multiplying. His desires are not like those of inferior animals, limited in number, and always directed to the same objects in the same form. In virtue of his imagination and his wide range of capacities, he is studious of change and intent on novelty. No sooner has one object been attained than his restless and fertile invention conceives of some other. One desire is no sooner gratified than another presses upon his

insatiate spirit; and hence it is that he needs to be surrounded by substances which admit of an indefinite number of transformations, and which are adapted in every state to satisfy some want or yield pleasure to some one of his many susceptibilities. In providing such substances, God has proclaimed how wondrous are his *Wisdom, Power, and Goodness*.

Is it not worthy of remark, also, how large a proportion of these substances become useful to man only *after they have ceased to live?* Life was necessary in order to build up their structures, to give them their peculiar properties, and then, its office being discharged, it disappears before the all-subduing and appropriating power of man. Our food is made up of vegetables and animals that once lived but live no longer. The artificial light which transforms our night into day, the artificial heat which diffuses warmth through our dwelling, substituting the climate of the tropics for the rigor of a northern winter, are derived from that which once had life but is now dead. So with our raiment and furniture. The cotton and linen with which we invest our limbs once flourished in the field; the silk with which we decorate our person was once the winding-sheet of a crawling worm; the woolen cloth which defends us from cold, once warmed the backs of animals; the table on which we write, the paper on which we trace these lines, the chair on which we sit, the floor on which it rests, the carpet that covers that floor, all point to death, as the mysterious change through which organic substances must generally pass before they become directly useful in supplying man's *Physical* wants.

One remark more will close this branch of the subject. Plants and animals, considered as independent of man, are absolutely and almost invariably useful to each other. The adaptations are fixed and all but constant. Where the means exist, and are left undisturbed by man, the end will in most, if not all, instances be attained. It is not so with the adaptations now under consideration. Plants and animals are calcu-

lated, as we have seen, to promote in a wonderful manner the physical enjoyments of our race. But man is endowed with a high but perilous prerogative. In virtue of the moral liberty, the power of self-determination which distinguishes him from inferior animals, he can promote, or he can at pleasure obstruct, the purposes of the Creator. By the exercise of a perverse and fatal ingenuity, he can transform that which is fitted to be a rich blessing into the direst of curses. Take the natural family of grasses for an example. It includes all the breadstuffs of the human race, from wheat down to oats, barley, rice, and millet. Applied to their proper use, they are an inestimable blessing, constituting emphatically our staff of life. But how is it when, bent on sensual excitement, man sends these grains to the Distillery rather than to the Flour-mill? From that which, properly used, imparts only strength and health, he extracts a substance which, though useful in Medicine and the Arts, becomes when consumed as a beverage a prolific and fearful source of disease, sorrow, crime, and death. Thus does God hold us to our responsibility as free and intelligent Beings. He supplies us with that which shall cheer or scourge us, according as we use it well or ill, and in the retribution which each one thus works out for himself He proclaims that the Judge of all the Earth will do right.

We come now to consider how the Creator has adapted Plants and Animals to the promotion of the *Mental, Moral, and Social* welfare of man. As they contribute to these ends, both in their *natural* state and through the transformations effected by *art*, we shall discuss each of these separately.

1. *In their Natural State.* Every human heart is instinctively drawn towards that which has life. This attraction seems to be due partly to sympathy and partly to imagination. In one sense we are ourselves plants,—*i.e.* we have involuntary vital functions analogous to those of plants, and which are therefore called *vegetative*; so that every opening flower, every rising stalk, seems to reflect back upon us a nature

in one respect like our own. Again, we are animals as well as plants,—that is, we have organs of sensation and voluntary motion like animals; so that when we look on them we are drawn by a twofold cord of sympathy, inasmuch as they are seen to reflect back upon us a nature in two respects like our own. Imagination comes in aid of the sympathies thus excited; because it sees, in the changes to which all living beings are subject, and in the mysterious processes through which these changes are produced, more than enough to awaken curiosity and wonder. In the case of children, this instinctive interest in animal and vegetable life appears to be greatly increased by an abounding nervous energy. The mass of nervous matter bears in a child a much larger proportion to its whole bulk than it does in an adult. In consequence of this, the vital activities of a child are, for wise and obvious purposes, restless and overflowing, so that they suffice not only to supply all physical requisitions of that age, but also to clothe, with an imaginary life, every object with which it comes in contact. The disposition of children to personify that on which they look, to ascribe life to inanimate objects and reason to animals, is familiar to every one. It may possibly account for the origin of *fable*,—a medium of instruction in which animals and plants appear as our sage teachers, and which has always prevailed from the days of Jotham to our own. Every child is in some sense an *Æsop* or a *Fontaine*, inasmuch as every child is inclined to establish a communion of thought and feeling between himself and all that has life.

Here, then, are so many different provisions of the all-wise Creator, which tend to make plants and animals subservient in early life to the great end of our mental and moral development. They awaken curiosity and keep it alive. They give scope and play to the imagination. They enlarge the circle of our active sympathies. Every plant that springs up and grows and declines,—every animal, whether in a wild or a domestic state,—every fluttering insect and soaring bird and

creeping reptile and moving quadruped, makes an appeal to the opening faculties of childhood. In those animals over which a child can exercise power, we have so many instruments also of *moral* discipline. He soon indicates whether he is disposed to abuse that power. Is he regardless of the sufferings of the animals with which he sports—beware lest, as he grows up, he be indifferent to the feelings of friends and associates, or reckless of the rights and happiness of all on whom he can trample with impunity. On the other hand, is he morbidly sensitive to the claims of these inferior beings, and disposed to transfer to them the sympathies and affections due mainly to those of human kind—beware lest his sensibility become his enemy, lest he lose in his imaginative communion with nature that robust strength of understanding, and that general equilibrium of soul which alone can fit him for the higher duties and enjoyments of life.

As a child advances in years, he is prone to withdraw his mind more and more from inferior forms of life, and to concentrate it on human forms and passions; or he is disposed to lose himself still more exclusively in sentimental contemplations. Either of these tendencies is to be deprecated; and either of them may be avoided in part, at least, through the systematic and proper study of *Natural History*. This science makes us acquainted with the great plan on which the Creator has constituted organic nature. It deepens our interest in living beings by enlightening it, by teaching us how admirably they are framed, how wisely adapted to their purposes, how full of problems that stimulate, and yet transcend all our investigating powers. Wisely conducted, it is a study that may contribute alike to *aesthetical*, to *intellectual*, and to *moral* development. If the reading of textbooks be combined with the observation of nature, with the careful examination of plants or animals, and that not in a pedantic, but in a liberal, thoughtful, and comprehensive spirit, the result must be favorable alike to taste and to cre-

ative genius. All great Poets, Painters, and Sculptors have been enthusiastic observers of the Natural World, and especially of the world of animated beings; for, be it observed, that inanimate objects have little artistic or poetical interest independent of the living forms with which they are associated. A landscape without vegetation or animal life, even the ocean divested of its restless movements, which give it the appearance of a thing of life, and deprived of the myriads of animated and rejoicing inhabitants with which our minds always people it, would be tame and prosaic. He, then, who would be a true artist must love all that has life. He must have caught its spirit; and since his pictures have value only in proportion as they are true, he must be intimate with the forms as well as the spirit of animated beings. As with the Artist, so with all who would relish his works. He who would raise his mind to the height of the great Poet or Painter or Sculptor, who would appreciate his creative or his pictorial skill, must have become familiar with his originals. Above all, must he do this who would enjoy and understand the works of Him who is the Artist of all Artists, and who has traced on the canvas of animated nature those majestic lines and those celestial tints and hues which human artists strive in vain to imitate.

But there is a culture still more important than the *aesthetical*. It is the culture of the *practical* understanding, of those faculties which fit us for the everyday duties and sober realities of life. Elementary studies have their chief intellectual value in their tendency to unfold, discipline, and enlighten such faculties; in their tendency to make a large, thoughtful, and accurate mind, one that shall be prompt alike to acquire knowledge, to employ it wisely in reasoning, and to apply it correctly and efficiently in action. But where can a study be found better calculated to form such minds than the study of Natural History? Properly pursued, it cultivates the habit of carefully observing and of correctly describing the objects with which

we deal ; it thus disciplines and improves the *perceptive* faculty. It promotes, also, the habit of comparing facts mentally, of arranging them into classes according to their resemblances and affinities, and of thus ascending, step by step, to correct *general notions* ; a habit among the most useful that we can possess, for it admits of application in every branch of study and in every department of business. It should be considered, also, that while thus disciplining our faculties, it is filling our minds with a knowledge of things instead of a knowledge of words,—that it is kindling a generous curiosity which is not likely to sleep hereafter,—that it opens before the mind an interminable vista along which it can travel, with ever-new delight, throughout the longest life, and that it thus supplies us with intellectual resources as exhaustless as they are delightful for our leisure, for our solitude, for excursions in quest of health, or for our years of declining or unoccupied age.

As *intellectual* is higher than *aesthetical* culture, so is *moral* culture higher than either. This is to be found as well in the formal study of Natural History as in our more casual and desultory observations, and in our various relations to plants and animals. It is absurd to suppose that any study or any class of Natural objects can have the *necessary* effect of exalting and purifying our moral natures. Part of man's trial lies in the power he possesses of transforming that which God has appointed to be a Teacher of Righteousness into a minister of Folly and of Sin. With depraved tastes and propensities, the mind will contrive to extract evil out of sources the most instructive and ennobling. Hence that study of plants and animals, which ought to enlarge the mind, may lead it by degrees to expend itself on insignificant questions. An intercourse with Nature, which ought to fill the memory and imagination with her forms of beauty and sublimity, may become, through perverse habits, the means of contracting it to the mere culling of simples or to the mere imposing of

technical names. It is the same with the legitimate *moral* tendency of these studies. That naturalists are usually ingenuous, kindly, and free from the taint of sordid passion, must be accepted as some proof that their pursuits are friendly to virtue. Indeed, his affections must be torpid to a mournful degree whose heart is not touched with the light which much intercourse with the inferior orders of beings tends to cast on their wants, their instincts, their habits. Little, too, can he think of God, or of his own soul, who can trace the structure of these beings, their manifold variety, their wondrous adaptations, without being drawn nearer to Him who holds in his hand the breath of every living thing. Little, again, can he know of the weakness of his own understanding, or of the boundless views of creation which such studies open before his mind, who does not learn from them some lessons of meekness and humility. "*The works of the Lord are great, sought out of all them that have pleasure therein.*" It would seem that he must be conscious of that within him, which is at war with God's majesty, who can gaze on these works and yet shut his eyes to the perception of their Maker and Preserver, who can trace that which reveals at every step the handiwork of infinite wisdom and goodness, and yet not own his presence. It must be because God's works are not pleasant to him, because they raise conceptions of his greatness and power, which, coupled with our impresible consciousness of guilt, warn us that there is danger in having to do with such a Being. Alas! that men will not consider that this danger is only increased by being disregarded, that our relations to the Most High are fixed and unalterable, and that the hour is at hand when we must meet, and forever know Him as an Enemy or as a Friend.

We cannot close these remarks, on the influence which plants and animals in their *natural state* have on the higher welfare of men, without adverting for one moment to their social and political tendencies. In the Natural Flora and

Fauna of a country we shall generally find a key to its earlier history. The scenery which impresses itself so deeply on national character, and especially on the character of an uncivilized people, derives much of its peculiar influence from the prevailing vegetation. From the kind of food, too, which it yields in greatest abundance, will flow many important consequences in respect to the rude industry and the domestic life of a people. No one can reflect that the inhabitants of tropical regions subsist on watery and saccharine fruits, growing almost spontaneously, while those of the arctic and antarctic zones feed almost exclusively on flesh or fish, procured with severe labor, prosecuted often for weeks at a distance from home, without perceiving that here are influences which must blend themselves with the whole current of social and political life. It is a subject which deserves a much more extended discussion than we can give to it in this place.

We only remark, in passing, that the general tendency everywhere is to unite men in societies, and thus to prepare the way for progress. It is also worthy of notice that wherever severe labor would be oppressive, as in very hot climates, there subsistence is obtained with ease; wherever, on the other hand, labor is desirable in order to keep up the healthy currents of life, and is also agreeable on account of the coldness of the climate, there subsistence is gained only by strenuous and incessant effort.

2. Having thus indicated some of the ways in which man's moral and intellectual welfare may be promoted through *plants* and *animals* in their *natural state*, we refer, in conclusion, to the influence which they exert through the *transformations effected by art*. It is well worthy of remark that few even of man's physical wants are supplied by organic substances in their natural state. Inferior animals (*mammalia* and *birds*) have natural clothing of hair, feathers, or wool. The state in which they find food, whether it be growing on stems or roaming through the wilderness or swimming in

water or flying through the air, this, the natural state of food, is the state in which they consume it. With man it is otherwise. He has no natural covering, and his food must be prepared for his use by cooking. The final cause of this difference is obvious. Animals are to win their sustenance without any except the most limited intelligence, and hence their resources are natural and instinctive. Man is to obtain his through intelligence and systematic effort; and hence plants and animals are so constituted on one hand, and human tastes and desires so ordered on the other, that intelligence shall be taxed and systematic effort enlisted in this work. The industrial efforts of mankind, their agriculture, commerce, and manufactures, are nearly all employed in producing the raw materials of food, clothing, and edifices, in transforming them into states better adapted to human wants, and in transporting them from places where they are abundant to other places where they are in demand. But can these efforts be made without developing intellect and subjecting the moral powers of men to a salutary ordeal? Take cotton-cloth for example. It forms now a large part of the raiment of civilized nations over the globe. But it does not grow as cloth in our fields. On the contrary, it grows a light, soft down in the seed-vessel of a plant. From that vessel, and its contained seeds, it must be separated with great care and labor. It must then be packed by the aid of mechanical power into bales, and transported from the cottonfield to some distant manufacturer, where perhaps it is only picked and carded, being sent to another manufacturer to be spun, to another, again, to be woven, and so on through eight or nine processes.

A pound of cotton has been traced from the East Indies to London, from London to Lancashire, from Lancashire to Paisley; thence to Dumbarton, thence to Glasgow, thence back to Paisley, and thence to the retailer of calico in London, having received additional value at every new stage in

this long journey of sixteen thousand miles. It was computed that one hundred and fifty persons had applied labor to it in its way from the first producer in India to the purchaser and consumer in London; and that its value had increased two thousand per cent. But who shall compute the moral and intellectual results occasioned by that single pound of cotton? Each one of the hundred and fifty persons who contributed to its ultimate value was more or less incited by it to industry,—industry which always implies some degree of attention, thoughtfulness, and skill,—each one was encouraged to punctuality, fidelity, and self-control. On the other hand, the calico which has been evolved from it, being an object of desire to many persons, is to them also a motive to industry, frugality, fidelity, and self-denial; while to the individual who finally wears it, the possession of decent and comfortable clothing is an incentive to self-respect and to respect for others. Here, however, as in everything else that concerns man, motives to duty can be transformed into an occasion of sin. At every step of its progress, from the seed planted to the cloth sold and worn, it has served as the touchstone of character. While it has urged to diligence and honesty, it has also presented opportunity and inducement for negligence and fraud. Thus does God display his moral character, and foreshadow the principle of his retributory system in all his arrangements for human welfare. True spiritual excellence in man must be the fruit of effort and self-control. Hence God has constituted his nature such that, in all the concerns and vicissitudes of life, he shall be at once “able to stand yet free to fall.”

The necessity thus laid on man of applying his intellectual and moral faculties, as well as his physical powers, to producing plants and animals, and preparing them for use, is the prolific parent of *social* and *political* blessings. The Agriculture of a people is occupied almost exclusively in the production of *organic substances* for human consumption. Nine-tenths of

the commerce and manufactures of almost every country are applied to the same end. But out of Commerce, Manufactures, and Agriculture grow Law, Government, and Literature. Whatever influence, then, all these can exert on the institutions and civilization of a people is an influence much of which must be traced back to this necessity, imposed *on man by his Creator, of subsisting on plants and animals only through labor.* And the influence it exerts on any one nation is but a type of that which it exerts on the intercourse and relations of independent States. Those substances produced only in one country but desired in others, become the all-prevailing Pacifiers between nations. They are gradually binding the countries of the world into one great league of amity and mutual co-operation. If Great Britain and the United States are enabled to settle grave and irritating difficulties by negotiation rather than by bloodshed, we owe that happy result not simply to the Wisdom and Moderation of Prime Ministers and Plenipotentiaries, but still more, perhaps, to the unobserved but all-powerful mediation which God has assigned to the cotton-plant and to Indian-corn.

Even uncivilized nations feel this benignant influence. Desire for the produce of art is quickly awakened among barbarians of every clime; and as their country almost invariably produces something which has value in the eye of civilized people, intercourse is thus established. Industry is substituted for the roving idleness of the woods, and the influences of art and refinement are transmitted from those more cultivated to those less so. Yet here as elsewhere is an agency that may be abused. How often has commerce that ought to be only the Benefactor and Civilizer of untutored barbarians proved to be their foe! How often have the ships of even Christian navigators gone to those people freighted with disease and moral contamination! How often have alcohol and opium and gunpowder been smuggled in where they could only work mischief, and where they were unscrupulously employed,

by the cunning and unprincipled, to debauch and enslave those to whom they were bound, by the most solemn obligations, not only of charity, but also of honor and of gratitude! If there be awful retribution in Heaven, it must surely be reserved for those whose ruthless spirit of gain can thus pervert God's best ministers of good to man into agents for his ruin.

PART III.

MAN A WITNESS.

BOOK I.

THE BODY A WITNESS AGAINST MATERIALISM.

WE have now considered the manner in which living creatures inferior to man have been adapted to the promotion of his happiness and welfare; and in these adaptations we have seen impressive evidence that the Creator is not only wise and powerful, but also benevolent and holy. The same conclusion will be forced upon us, if we examine the Constitution of Man himself as a *Physical, Intellectual, and Moral Being*. The Divine Being presents us nowhere in nature with a monument of his moral perfections so grand, nor does He anywhere, except in his Written Word, read to us such pointed admonitions, in respect to our duty and destiny, as may be found, if we carefully consider how fearfully and wonderfully we are made in respect to body, soul, and spirit.

As we intimated in the last chapter, man is made up of different and, in some respects, independent natures. He was once regarded as a Microcosm, and, in a sense higher and truer than was dreamed of by the Poets or Philosophers of old, he is so. He is a system of matter, in which chemical and mechanical forces are constantly at work. But he is more; inasmuch as there are functions and changes in his body which can be resolved into no known Physical Laws, and which seem to prove beyond a peradventure that his stomach is something higher than a chemical retort, and his heart and blood-vessels more and better than hydraulic machines. We

are constrained to conclude that there is a subjective and immaterial power, which we call *Life*, that masters and subordinates to its own special uses all merely physical agents, and that organizes and builds up a frame which, in its merely vital and vegetative organs, may be regarded as a plant. But as the phenomena of *Life* compel us to assume the existence of something in man higher than matter, so the phenomena of *sensation* and *voluntary locomotion* lead us to the assumption that he has that also which is higher than life,—even an animal soul, which is governed mainly by instincts; and back of these lie another and most striking class of phenomena,—those of free and deliberative intelligence, of self-consciousness, and of moral perception,—which constrain us to infer that there is in man more than instinct, more than animal organization, even a spirit kindred in its nature and essence, though not, alas! in its temper to the spirit of God.

The existence of such a spirit in man, as a free, deliberative, self-conscious, and accountable agent, as God's own witness in the soul will be apparent to some extent, if we merely consider—I. The *physical condition of man by nature*, and his *physical history* as contrasted with that of animals. II. The *structure and functions of his physical organization*. We shall find that even on man's lowest nature there has been written the clearest witness of the existence and supremacy of his higher endowments and to his consequent responsibility.

I. What is man's *physical condition by nature*? Suppose him brought into the world for the first time, as some inferior animals are born, matured in size and strength. Suppose him left, as they are often left, unaided and solitary, with no guide but instinct, and no physical resources but those of his own body. Regard him, in other words, as a mere animal, having no powers but such as result from organization or are implanted full grown in his nature. In order to aid us in this hypothetical inquiry, let us imagine that by his side we have one of those insects, which may be regarded as a fair repre-

sentative of existences merely animal. Take, for instance, the *Buprestis*, one of the coleopterous order, which may stand as a type of the family of beetles. The animal *Buprestis* and the animal man (if he be but an animal) are to get food, defend themselves against enemies, and provide shelter both for themselves and their young by the use of none but natural weapons and instinctive intelligence. For this purpose what has the insect? It has a coat of mail over its body. It has two wings to carry it from place to place, and over these wings it has elytra, or hard shields, to protect them from harm. It has a hard cuirass over its breast; its eyes are shielded from the thorn of the eglantine and the stings of enemies by a strong but delicate network; its legs enable it to overtake its prey; its mandibles seize and devour it, and at the same time dig caves in the ground to receive its booty or its eggs; and when hard pushed by an enemy it discharges an offensive and corrosive liquid, which quickly drives the enemy away. Could all human ingenuity be directed to the structure and functions of this insect, it is doubtful whether all human ingenuity could suggest a single improvement.

But how is it with *the animal man*? Where is the strong and hard shield that protects his body; where his natural weapons for attack or for defence; where his natural fleetness to overtake prey; where his implements for digging, cutting, or building; where his protection against the frosts of winter? Alas! if man be but an animal, whose powers are the result of organization only, whose career is to be carried forward in virtue of pure instincts, he is of all animals the most forlorn and helpless. No insect so humble but his lot might become to our race the object of envy. Experience affords us no example of man thus cast adrift, alone on the wide world, with no resource but his organism and his instincts, and this for the simple reason that such a man's existence would quickly end. Even Alexander Selkirk, with all the advantages of his past experience, and of an education which embodied much

of the accumulated intelligence of the world, furnished, too, with a supply of food and clothing for present wants, and not left without tools, found it sufficiently difficult to maintain life on his solitary island. How would it have been if he had found himself there in the condition of the Buprestis, when it bursts from its chrysalid sleep, and comes forth without experience, and without store of food, to provide for itself?

And yet what is man's physical *history*? In his infancy, the most dependent of animals; in his maturity, the most destitute in respect to instincts, to natural clothing, and to natural means for gaining food or driving off foes,—he is yet *the lord of the creation*. The fear of him and the dread of him is on every beast of the field, and every fowl of the air, and on everything that creepeth on the ground. He can neither wrestle with the bear, nor swim with the otter, nor climb with the monkey, nor leap with the tiger, and yet he can capture and destroy them all. He can subjugate the most fierce and stormy of Nature's elements. He can tame the lightning; bringing it in harmless silence to his feet, or he can charge it with messages of friendship or tidings of business, and bid it go for him thousands of miles in one second of time. He can harness wind, water, steam to his machinery, and employ them in fabricating cloth to cover his defenceless body, food to supply his fastidious and ever-varying tastes, houses to shelter him, and books and pictures for his instruction or delight. He can explore by thought the realms of space, travel back over all the history of the past, and predict for thousands of years in advance the obscuration of some planet or the transit of some star. He can take his stand in thought, on what is deemed the outermost verge of our solar system, at a distance of one thousand seven hundred millions of miles from the globe on which he dwells, and there he can seem to feel beneath his feet the restless heavings of a great sphere, pointing to some perturbing force still

farther in the distance. The amount of that perturbation he can calculate; he can determine where and of what nature the body must be which could occasion it; he can affirm that body's existence, though it be yet unknown, and directing his space-penetrating tube into the dim distance, he can detect the undiscovered voyager, and thus show how the facts of practical verify the deductions of physical Astronomy. Nay, he can pass, restless and adventurous as he is, beyond the bounds of space and time, and sing of that which has transpired in Heaven or been perpetrated in Hell. He can represent to himself Nature's immaterial and spiritual beings, and can reason well of their high faculties, their solemn responsibilities, and of the endless career which lies in prospect before them.

And wherefore? Whence achievements so grand by a being so apparently helpless? Is it not because man is more than animal and scarcely less than angel? Reared by slow degrees from helpless infancy to a height so transcendent and sublime, does he not show that he has within him powers of free and ever-progressive intelligence, and that he has had breathed into him a portion of the "Inspiration of the Almighty," and that he employs his organs and his body only as humble instruments of a spiritual development? That such is, indeed, the fact, will be still more apparent if we examine somewhat in detail—

II. *Man's organism.* Begin at the base of his skeleton, and ascend till you reach the summit. This column was evidently intended for an erect posture, since every human being, though compelled in infancy to take the horizontal position, or go on all-fours, finally attains to an upright posture, and when moving progressively can be at ease in no other. That it is the posture for which man was made will be evident, also, if we examine the structure of the body. It rests on a movable basis, composed of two feet, each of which is made up of arches, that are adapted alike for support and for

motion. From each of these feet (but not from the middle point in each, since the weight to be sustained tends to fall forward rather than backward) rise a vertical column (the tibia or leg-bone), and from the summit of these, again, two other columns, inclining outward (the thigh-bones), on which rests the broad plinth called the pelvis. All below the pelvis is used for purposes of progression or support; all above is appropriated either to the vital and involuntary functions, or to the higher offices of sensation, thought, and voluntary locomotion. On the pelvis rests the spinal column, composed of a great number of bones, articulated so as to allow much freedom of motion to the trunk, independent of the lower limbs. This column, in order to provide room for the heart, stomach, and lungs, and at the same time secure equipoise and gracefulness of motion, has a double flexure like the italic *S*, being inclined backward at the chest, and forward at the loins. On the summit of this column rests the head, the ensign of thought and of command.

All these provisions, and especially that which has adapted two only of the four extremities to support, point clearly to the erect posture as that for which man alone, of all animals, was made. This posture can be maintained only by the use of a much larger number of muscles than has to be used for that purpose by any other animal; and these muscles are to be moved, not as in many lower animals, by virtue of some unerring instinct, but through deliberation and choice. The young not only of quadrupeds, but of some biped animals, walk from the instant that they are born; the young of the human species *learn* to walk by many unsuccessful trials. In this erect posture, then, we see evidence that man is a free intelligent agent, not governed by instinct only, but endowed with a deliberate mastery over his own body which is given to no other animal. We see evidence, too, that man is emancipated from subjection to mere animal wants; and in the manner in which his head rises towards heaven, we seem to

have indication of the supremacy of his spiritual over his sensual nature.

The same conclusion is reached when we examine *the head*, and compare the relative space occupied by the cranium, or that portion of the skull which surrounds the brain, and that occupied by the organs of sensation, or by those allotted to the reception and preparation of food. Organs of sensation indicate, by their proportional development, the degree to which an animal is subjected to excitants from without; the development of the jaws and mouth indicates its relative voracity. Now, tried by these tests, man proves to be less voracious and less subservient to outward excitants than any other animal. His brain, in other words, bears a much larger proportion to the rest of the head. What has been called the facial angle—formed by two lines, one dropped from the most prominent part of the forehead to the sockets of the upper incisor teeth, the other drawn from these sockets through the lower part of the nose and the meatus of the ear—is in man nearly a right angle. In animals, as we descend from the ape to the fish, this angle diminishes, the brain being less prominent, the organs of mastication and of sensation being more so. In the enormous jaws of the shark or crocodile, and in the huge mandibles of the stork or pelican, we see how the predominance of the animal appetites has been shadowed forth in their appropriate organs; while in man's head we have indication how he was made for the exercise of thought and self-government.

So is it with his *hands*. By his erect posture and gait, these anterior extremities are liberated from the purpose of progression to which they are applied in most other animals, and are left to be employed at the pleasure of their possessor. They seem, too, to be studiously fitted not for any special use but for an endless variety of motions. Suppose that instead of being divided into fingers, the hands were composed of one fleshy or bony mass; or suppose that the fingers instead of

three joints had but one, or had none; or suppose that the hand were without a thumb, or that the thumb of man was like the thumb of the baboon,—in either case the range of man's activity would be essentially circumscribed. Formed as this wonderful organ is, it is adapted alike to action and perception; alike to industry, to literature, and to the arts of Design; alike to attack and to defence, to the fabrication of every kind of tool, and to the wielding of every kind of weapon. Suppose man to be a reflective, self-conscious, and progressive being, endowed with a high and free intelligence, and then we can conceive of no natural instrument more perfect than his hand. Suppose him to be an animal endowed only with instincts, and predetermined by his organization to a certain career, and then we can hardly conceive of an instrument less fitted for his purposes. Its whole value seems to lie in its being the appropriate instrument of adlibitive intelligence. Because, deprived of that instrument, man's reason would be comparatively powerless, some have ascribed his superiority not to any spiritual ascendancy, but simply to the greater excellence of that organ. But man's hand would have accomplished little for him without his higher faculties; and it would be as reasonable to infer that Shakspeare owed his genius to his pen, because without it he could not have written *Macbeth*, as to conclude that man owes his supremacy to this structure of the hand, because he needs it in order to give effect to his intelligence and spiritual purposes.

Corresponding evidence that there is a spirit in man, and that his body is but the instrument of this spirit, is found in almost every organ. For example, *the apparatus for motion* in man is fitted to a number and variety of muscular movements, much greater than can be made by any animal. These movements, too, are more under the direction of deliberative intelligence, are naturally more graceful, and are more expressive of ideas and sentiments. So with the *organs of alimentation and reproduction in man*. For their safe and proper use they

require on his part consideration and self-control to a degree not known among animals. It is the same with the *respiratory organs*. In man these are subservient not merely to breathing and uttering natural cries, but also to laughing, to articulate speech, and to expressing every shade of emotion, while through their connection with the brain, the heart, and the muscles of the face, they cause the passions of the mind to repeat themselves on the countenance and in the action of the vital organs.

The organs of sensation, reflection, and locomotion in man, when compared with those of animals, lead to the same conclusion. In the lower tribes, the impression which is made on the nerves of sensation seems to react immediately on the motor nerves, so that the motions are in a good degree instinctive, no thought or deliberation being interposed. As we ascend to those of higher rank, the cerebral mass is greater, and in the same proportion they are enabled, we find, to interpose thought and contrivance between a sensation, ending in desire and the corresponding action. Now, the cerebral organ in man is much larger in proportion to the whole bulk of his body than that of any animal, being the 1-35 part of his whole weight; whereas in the dog it is but 1-120; in the horse, 1-450; in the sheep, 1-750; and in the ox, 1-800. Thus loudly does our organism call us to the exercise of pre-eminent forecast, to "large discourse of reason," and it does it all the more loudly that an organ in man does not predetermine, as in animals, its full and proper use. Wherever and in whatever degree they possess an organ, there we find the corresponding faculty in full exercise, whereas in man this faculty may be wholly buried or essentially perverted.

The same lesson is taught by the *organs of perception* and by those of *speech*. The young of most animals see and hear perfectly from the first; the young of our race *learn to see and hear by a slow and somewhat laborious process*, coming only by degrees to associate any sensations which they experience

with the external objects which occasioned them, and with the proper nature and place of those objects. It has been well said of our organs of perception that they are by nature "adjustable but not adjusted." In most cases, the art of adjusting and using them is learned so early in life that we are unconscious of the process. But where one born blind is restored to sight in later years, the dependence of the senses upon the higher mental faculties, and the manner in which all impressions upon them derive their value and significance from the exercise of those faculties, becomes at once apparent. It is the same with the organs of speech. Not merely articulation, but gesture, attitude, expression of face, and variety of tones, all point to man's pre-eminent endowments as a rational being, and all show how the successful use of his animal gifts depends upon the possession and due development of spiritual faculties.

MATERIALISM. We conclude, then, that man's material organism cannot be the cause of his intelligence and voluntary activity, but is rather their instrument. When carefully considered, in respect to its structure and functions, each organ seems to point up towards a spiritual power in man, and nothing but the assumption of such a power can make it intelligible. We will add here but a few words concerning that phase of materialism which would resolve all mental activity into functions of the brain. It seems to be equally at variance with facts and with the evidence of consciousness. When we perform the simplest voluntary act,—*e.g.* take up a book or write a word,—does not our own consciousness teach distinctly that besides the muscular effort, and the corresponding nervous irritation, there is a spiritual or immaterial act, in the volition which preceded them, and in the desire, reflection, and forecast which led to that volition? This consciousness is still more clear and explicit in the case of acts which are purely mental; such as voluntary efforts of memory (usually called recollection), or of reflection and

reasoning. The brain may be employed in all these acts, just as the pen, the hand, the arm are all employed in writing down this sentence. But no one would dream of referring the power which conceived the sentence either to the arm, the hand, or the pen. Why, then, refer it to the brain, which consciousness proclaims is but another link in the chain of means and instruments? Every language contains words significant of spirit as distinguished from matter; and as every language is the mirror which reflects to us the natural and necessary convictions of those who used it, we have in this fact also conclusive proof that belief in the proper immateriality of the soul is the spontaneous growth of our consciousness.

The *facts* which attest the validity of this belief are very numerous. We advert to only a few of them. The mind can react upon the brain even when this organ is diseased. By invoking the power of the will it can for a time bring back clearness and calmness to our tumultuous conceptions. Through sudden and violent emotion it can arrest the progress of disease. It can, by a stern effort at self-command, tranquillize the agitation of the nerves, and by determined resistance arrest the power even of poisons that have been taken into the body. In cases of paralysis, the patient tells us that his brain is too weak to allow him to think coherently; but his soul asserts her independence by perceiving and mourning over the imbecility of its corporeal instrument, and by remaining alive as ever to moral distinctions.

The fact that the mind appears to share in the derangement of its special organ, is nothing more than we ought to expect. It is through that organ that the mind manifests itself. If the medium of manifestation becomes incapable of performing its office, we must expect that the power to be manifested will disappear, or be in some degree obscured. Our ability to read with glasses depends on their clearness and proper sphericity; but we do not therefore conclude that reading is a function of

spectacles, much less a function of those which have only a given degree of clearness and sphericity. But our limits will not permit us to enlarge further on this subject here. We shall resume it in another connection.

Meanwhile let us observe the light which these views cast upon our true condition and our proper responsibility, and also the corroboration which they afford to the moral precepts of the Bible. Independent of a careful study of the different parts of our constitution, and of the evident subordination assigned to the corporeal organs, we might suppose that, in obeying animal impulses without reflection, we were obeying the decrees of the Creator; and we might imagine that there was inconsistency between the Natural Law, which seems to enjoin or authorize indulgence, and the Revealed Law, which commands self-denial and moderation. These impressions must disappear before a full and candid examination even of our material organization. We see that, even on our lower nature, is inscribed evidence that we are more than animals. The body points upward to the soul, exhorts us to prefer its interests before all things, and protests against an unreflecting submission to appetite or passion. On such submission it brings down retribution through its own diseases and sufferings. And in the impotence and the perverted cravings which wait on the abuse of its organs, it yields persuasive proof in favor of that remedial dispensation which offers not only pardon for our sins, but also strength for our weakness and a power to cleanse and purify all our corruption.

BOOK II.

CHAPTER I.

THE SOUL A WITNESS TO THE DIVINE EXISTENCE.

IN the preceding Book we glanced at the structure and functions of man's body, and compared them with those of inferior animals. We saw enough of unity and correspondence to show that both were creations of the same mind and hand; but we saw, also, that there was vast *dissimilarity*. In almost every respect *man's organization* has striking peculiarities, and these peculiarities are utterly inexplicable, except on the supposition that his *psychical* nature is pre-eminent for its endowments over those of any class of animals. The possession of a free, self-conscious, and discursive intelligence,—of a Reason vast in its range, ever-progressive in its powers, deliberative in its nature, free and self-determined in its volitions,—is the only fact which will explain the structure even of man's body. And that reason, as we have seen, must be the attribute or function, not of material organs, but of a spiritual substance which we characterize as soul or mind.

The Science of *Soul*, then (hence called Psychology), or the Science of Mind (hence called Mental Philosophy), is the source from which we propose to draw a new series of arguments and illustrations. Rich as it is in materials, these materials have been hitherto much neglected. But few of our popular works on Natural Theology notice the *psychological* argument at all; and even they, in most cases, discuss it in only a cursory manner. Lord Brougham has pointed out this

deficiency, but has not supplied it. Dr. Chalmers has presented some of the proofs furnished by our moral constitution; but we know of no work in any language—in English there is certainly none—in which the argument has been largely developed, in connection with a rigorous and extended analysis of the faculties of the human mind. This omission cannot be supplied in this work, but it is to be regretted. Where is there a nobler subject of contemplation than the soul of man? Thought can fly far away into space, beyond the ken of our largest telescope. Emotion can traverse the ocean, which separates loving and confiding hearts, with more than telegraphic speed. Fancy can explore the universe, to gather materials for her airy castles in a moment of time. The most complicated trains of thought can be untwisted and analyzed with a celerity which leaves behind the utmost dexterity and skill of the accomplished chemist. And when we think of the manifold and seemingly discordant energies of the human soul, all working together in perfect harmony, the intellect laboring with thought, the heart fired with passion, the imagination ranging from earth to heaven and from heaven to earth, the moral sentiments swelling with high design, and all these powers at one and the same instant collecting and concentrating themselves in some mighty and noble volition in the cause of truth or duty, where is there a grander subject for thought, or one more likely to reflect light and glory on the character of its Author and Upholder?

Illustrations furnished by the mind possess, moreover, this advantage,—that they are accessible to all. Those drawn from Chemistry and Physiology must, in many cases, be taken on authority. The facts cannot be examined by the hearer or reader. But psychological facts are open to such examination. They transpire, most of them, in each one's own breast. They can be remembered, reproduced, modified, observed, and thus the statements of the teacher be verified or corrected by the scholar. And this course is essential, if we

would clearly apprehend and appreciate the facts and arguments which are about to be presented. They are taken from each one's own mental experience, and each one must look within, therefore, in order to find the original of the pictures which are drawn.

And are there not other advantages in such a line of argument as leads to the contemplation of spiritual rather than material facts? The soul is too much given to wandering abroad in quest of the sensible and palpable. This propensity is strengthened by the majestic advances now making in the material arts and sciences. We need studies to act as a counterpoise. In a mystical or ideal age we might appeal to the external world for facts and influences to redress the balance which a too intense and constant contemplation of the spiritual might disturb. But this is not our danger now.

Consider, too, how much we need these studies, in order to refresh our memories in respect to the worth and value of our souls. The capitalist does not trust merely to recollection in respect to the extent of his possessions. He takes down his Rent Roll; he looks over his Bonds and Mortgages and Certificates of Stock; he counts his coin, and thus assures himself that the *power* which is represented by all these is a power which still actually belongs to him, and which is awaiting his pleasure. And should it not be so with our mental endowments and possessions? How shall we assure ourselves that they are ours, or measure their proper and surpassing value, unless we survey them frequently and with care? Transient views, hasty glances, are not sufficient.

And without studying our minds, how shall we know well how to use them? They are given to us to be enlightened, moulded, directed, saved. But this great work implies self-knowledge, self-knowledge implies self-examination, and self-examination, if it would not mislead, should involve a comprehensive and searching inspection and analysis of *all* our mental operations; for any one class of them is mysteriously

but most essentially affected by the character of others, as, for instance, the conclusions of the understanding by the state of the feelings.

He, then, may felicitate himself who, by enlarging on the *psychological* argument, contributes in the least to inspire men with some taste for these studies; and especially may he do so if he lead them to cultivate such studies in a religious spirit and for the attainment of religious knowledge. It is a mournful fact, that men can pass through life knowing little of their own natures, though wise in the wisdom of the world; keen and sagacious as observers and reasoners upon the conduct of other men, but ignorant what spirit they are of themselves; known to others, but unknown to themselves. Nothing can break up this unholy spell but strenuous effort to study our own hearts,—to see ourselves as others see us; and, above all, as we are seen and known by the All-seeing. A knowledge of the constitution of the human mind in general, of our own minds in particular, and a careful comparison between the *normal* and the *actual* state of our souls, between these souls as they *are*, and these same souls as they *ought to be*,—nothing short of this can make us wise indeed.

We come, then, to ask, what *testimony has the soul to give* in respect—I. *To the Divine Existence and Character.* II. *To Man's Duty and Destiny?* We take as a witness, not the soul or mind of any particular individual, formed in this or that land, in this or that age, whose native characteristics have been modified, in some respects exaggerated, in others impaired, by the artificial influence of education, custom, civil government, literature, or religion. We take, rather, the *average man*, not the man of the woods, for even his character has been greatly affected by position and education; not the man of the city, for he may have been yet more thoroughly transformed, but the *Representative man*, who can serve as the type of his race, who embodies those fundamental, characteristic, and ineffaceable attributes which belong to our spe-

cies everywhere and always, who is made known to us partly through our own consciousness, partly through a comparison of our mental acts with what we learn through observation of others, partly through history, partly through the sketches and portraits drawn by great masters like Homer and Shakespeare. This is the witness, more or less developed and reflective in his habits, whom we would interrogate. We suppose him destitute of all *bias* or *prejudice*,—for the time being destitute, too, of any positive knowledge in respect to Religion, and only summoned to state what his *reason*, *instincts*, and *sentiments* suggest in regard to the great problems of Theology. And we would also observe how far his answers correspond with those which we have previously obtained from Nature and those, also, which we get from the Bible.

Is there any *Spiritual Being higher than man*? To this question the soul supplies a twofold answer,—one suggested by *Reason*, one forced on us by our *Instinct*.

(a) *REASON* suggests that, on all other subjects we reason from the known to the unknown, and from the seen to the unseen, on principles of analogy. We should, therefore, do so here; and what is the result? We know that there are spirits as numerous as there are living men, and that there have been spirits in times past as numerous as the whole past population of the globe. We know that as they advance from infancy to childhood the body becomes less and less essential. We observe some individuals so frail, so intellectual, and spiritual that we should not be surprised to see them disappear; and we are constrained to believe that the souls of men can exist without their bodies. What is the reasonable inference, then, with respect to higher existences,—spirits of a higher order?

Again, ascending from the lowest order of animals to man, we see a gradual increase of intelligence as contradistinguished from instinct, new faculties added, old ones improved, until we pass the broad gulf that separates the mind of man from

that of animals. And are we to stop there? Can we ascend no higher? Below and on our own level all is life and existence; *above*, is all a solitude? To this point there is an ascending Hierarchy. Does that Hierarchy rise no higher?

Or, again, we pass downward, till we reach the line that separates the visible from the invisible. Is all beyond an empty void? The microscope answers. Ascending, take the other line which separates the visible from the invisible. Is all across that line a dreary void? There are some beings whom we cannot see, because they are too small. May there not be others whom we cannot see, because they are too subtle, too ethereal?

Once more. There is graduation from below upward to man. Why not from man upward through Angel and Archangel, Cherubim and Seraphim, Principality and Power, till we pass from the *finite* to the *Infinite*, from the *temporary* to the *Eternal*, from the Derived and Dependent to the *Underived* and *Self-existent*?

Reason, then, guided by *Analogy*, would infer that there may and must be Spirits higher than man's, and that presiding over all would be One of Boundless Power and Knowledge. Does it suggest anything of their natures? It does—

1. From the fact that, wherever intelligence and affections are found among men, they have the same properties and are subject to the same laws, we infer that man's nature is everywhere the same. From the fact that so far as animals exhibit understanding and rational emotions and affections, we can comprehend them and communicate with them, we are led to the fact that there is a certain likeness and analogy between the psychical character of all terrestrial animals. Would not this suggest that a corresponding likeness pervades *all intelligences*? If between men and animals there can be much in common, how much more between men and superior spirits!

2. And this conjecture is greatly strengthened from the nature of truth. Certain truths, moral and mathematical, are

necessary, and wherever seen must command, on the part of the mind that has sufficient capacity to apprehend them, the self-same conviction and assent. There can be in the Universe no other Geometry or Arithmetic than our own.

And so of many *contingent* truths, such as those of Astronomy and Mechanical Philosophy. Hence Angels and God must have intelligent and moral natures, in some essential respects, like unto our own. We wonder not, therefore, as we open the Bible, to read that God made man in his own image, or that there is more joy among the angels of heaven over one sinner that repenteth than over ninety and nine just persons which need no repentance.

(b) The answer which *Instinct* gives to the question proposed is felt in our own hearts; is seen in the conduct of others; is attested in the practice of every nation. Its voice is clearest and most commanding when great emergencies press upon us—danger, affliction, helplessness. When we find ourselves heartsick with the world's emptiness or treachery,—then who does not pray? who does not crave support from something higher than Nature or Man? Where have not altars risen, priests interceded, victims atoned, and the gods been feared or loved? At other times, reason perverted may darken counsel; passion may make us wish there were no God; the world's pomp and cares may cast his presence and glory into dim eclipse; but what are these but artificial masks and disguises, that conceal the natural man? Danger and grief thrust them aside and show us what is the true voice of our inmost hearts.

Is this voice deceptive? So some would tell us. And so some teach in respect to that voice which proclaims that there are without us beings to be loved, duties to be discharged, even an external world to be believed in. Philosophy, too ingenious, too much given to question and scrutinize, has sometimes sought to persuade herself that our knowledge can never pass without the sphere of consciousness; that we can know

nothing except the *me*—the *subjective*—what *passes within*. But a yet wiser philosophy has taught us that the *subjective* implies the *objective*,—that *impressions* on the organ necessitate the belief in a cause *ab extra*,—that emotions within of love to parents, to children, prove that there are parents, children; and so likewise that tendencies to worship, *honor*, and fear God, in forcing upon us the conviction that God is, demonstrate that the conviction is more than mere illusion. Otherwise we could never have *a first principle* in moral or practical questions,—no *starting-point* for reasoning and investigating,—no axioms,—but all would be a wide waste of doubt and darkness. Otherwise all our primary and irrepressible beliefs must be regarded as so many vain delusions or foul impostures.

CHAPTER II.

THE SOUL A WITNESS TO THE DIVINE UNITY, PERSONALITY, AND WISDOM.

THE first question, that which respects the *Divine Existence*, we have already discussed; we come now to the second.

Second. What is the *Divine Nature*?

Observe that we lay aside, for the present, all Divine Knowledge derived from other sources, such as External Nature and Revelation, and supposing ourselves uninstructed in any way, and unbiased, we ask, what says the *witness of the soul*,—of that mind which may be taken as the Representative of our Race after its manifold experiences through the term of six thousand years? Having obtained, by this independent process, a clear view of the psychological evidence, we may add it to that evidence obtained from Physics and Physiology, remembering that the value of the whole is not the mere arithmetical sum of the separate parts, but is rather a certain power of that sum, each separate part of the proof deriving additional strength and value from its combination with the others.

The question, what is the Divine Nature, involves five distinct problems:

I. Is God one or more? II. Is He Personal or Impersonal? III. Is He Intelligent or Unintelligent? IV. Is He Benevolent or Malignant? V. Is He *Holy* or *Unholy*? Or, in other words, what is the testimony of the soul in respect to the *Divine Unity, Personality, Wisdom, Goodness, and Holiness*?

I. The *Divine Unity*.—Is God one or many? Is Monotheism or Polytheism the system taught us by the nature and laws of the mind? When men have undertaken to invent Religions, Polytheism has often been the result. Was it from a consideration of what the mind teaches? We conceive not. The various systems of Polytheism may be traced, we apprehend, to the neglect of all proper study of mind, and to a too exclusive regard to the *powers of external Nature and the achievements of illustrious men*. When from such partial views we turn to listen to the voice from within, that which comes up from the depths of our own Being, we find much which, if duly considered, will force on us the impression that *God is One*.

1. We learn from consciousness that we have existed but a short time (for our consciousness tells us nothing of any existence of ours before we were born into this world), that we cannot by any power of ours preserve that existence, and cannot, of course, have originated it. We are not the authors of our own being, but have derived it from some other, and so we ascend back till we get to a self-existent Cause, who must be eternal, because underived; who, as the author and upholder of all other existence, can scarcely be less than Infinite in Power and Immensity; and since two or more Infinites cannot exist together, we have thus One, and but one, Self-subsisting, Eternal, and Almighty Creator.

Or, in another form. The notion of time limited (which all must form implicitly, or explicitly) involves the notion of time unlimited; so of space limited, power or cause limited; and thus we get by another process to the ideas of Infinite Power, Duration, Knowledge, etc., which we conceive of only as attributes of some substance, properties inhering in some subject or object.

Thus we reach a conviction of the Divine Unity through simple and necessary processes of the Reason, independent of anything but our general consciousness and our most abstract notions.

2. Again, what conclusion would result from observing psychological facts? The same. For everywhere throughout the earth, and back through all time, we find men characterized by the same psychical properties. There is endless diversity in original temperament, and that diversity is still further increased by education, institutions, and physical condition; but beneath it all there are the same essential attributes, the same intellectual powers, the same desires and susceptibilities, the same moral sentiments. Man civilized and uncivilized, the Esquimaux amidst perpetual snows, the African on equinoctial sands,—all have ineffaceable and identical characteristics of a common nature. But if all men of all the nations of the earth are thus made of one blood, does it not prove that one God and Father is the Maker of them all?

But if we look beyond men to animals, we see reason to conclude that their mental qualities and susceptibilities, whatever may be their measure, came from the same hand with those of men; and if in our view of man we embrace his *animal* as well as his *spiritual* nature, we see there an epitome, as it were, of the universe,—*mechanical* and *chemical* actions taking place in his body essentially the same as those which are taking place in the inorganic world of matter,—*vital* processes precisely analogous to those of plants and animals; while in his soul are *spiritual processes*, representing in kind, though not in degree, all that we can conceive of as possible in the operations of mind. Here, then, all parts of creation are summed up into one, as if to show that there is a bond of unity pervading all things, and proclaiming that One Mind conceived and One Almighty hand framed them all.

II. But, again, is God *Personal* or *Impersonal*? On examining the human soul, do we find that it points towards Theism or Pantheism as the true view of God? We offer no injustice to the latter when we say that Pantheism does not spring from the *Instincts* of the human heart, and can hardly be drawn from an inductive survey of the facts of con-

sciousness. Pantheistic Philosophers have usually distrusted all the instinctive impulses of their minds. They have declined, or but sparingly used, the psychological and inductive method in their investigation. They have preferred *Ontological* speculations,—have started from the notion of being in the abstract, from the most general conceptions of the Infinite and Absolute, and, reasoning from these with as little appeal as possible to consciousness for specific mental phenomena, with as little use as might be of what they have stigmatized as empirical—*i.e.* of inductive—reasoning, they have labored to construct a Universe and a God for themselves by a rigorous process of demonstration:

They take the high *priori* road,
And reason downwards till they doubt of God!

doubt of his personality, and of all such views of Him as are calculated deeply and benignly to impress and regulate the heart of man.

But what says that heart itself, interpreted by the voice of consciousness?

1. It says, I am conscious of MY OWN INDIVIDUALITY; conscious that I am not a part, but a whole; dependent, yet distinct; an integer, not a fraction; having, within the sphere of my own proper consciousness, all that is myself, but no more. My consciousness tells me nothing of my being a part of the Universe, or a part of God. It revolts at such thoughts. It tells me that I suffer, which God, as Self-existent, Eternal, and Almighty, cannot. Hence I am not a part of God, nor is any other man, nor is Nature, a part of Him. In Him, indeed, all things exist and have their being. But does He exist and have his Being in them? These are not independent of their Creator and Upholder; but is not their Creator and Upholder independent of them? He is pleased to send forth, from the centre of his own Omnipotence, a train of worlds, and a Hierarchy of Creatures. He expresses Himself through

them. He moves and actuates them at will more easily than we can move any member of our bodies. But He is not *of* them, though in one sense *in* them. He sits behind his own creation, and might, for aught we can know, have forever dwelt in the solitude of his own existence but for his own good pleasure.

2. Again, the heart of man says, I am conscious of MY OWN PERSONALITY. I know that I am a *person*, not a *thing*. (a) I can know myself; can make my own thoughts and feelings the subject of contemplation; can give them *objectivity*, to borrow the language of Metaphysics. I have *self-consciousness*, I can form an idea of the *me*, of myself, as distinguished from the *not me*; of the *subjective*, as opposed to the *objective*, and meditate upon my own character and prospects. Can animals do so? (b) Again, I can *possess myself*, I can appropriate, use, direct at will my own powers; but I cannot make myself over, nor can any one make me over, as a chattel, into the possession of another. Another may overpower me, he may exact service from me, he may compel me to work for his benefit, not my own, but he cannot take possession of my soul, and make me do it unresistingly, thus transferring all my volitions to himself. Can animals possess themselves? (c) Again, I have *moral freedom*, the power of self-determination, the capacity of arbitrating between motives, and, instead of yielding passively to that motive which is adjudged to be the strongest, of obeying that which though weakest is yet seen to be most *rightful* and *authoritative*. But does not such a *personality* on my part point to a corresponding personality in my Creator? Can the thing formed be nobler and spiritually greater than the thing that formed it?

III. Is God *Intelligent* or *Unintelligent*? Is He a forecasting, deliberatively wise Being, or is He not to be distinguished from the blind, adaptive power which we call nature, and whose workings, though unerring, are instinctive, not rational? It has been alleged that when we reason from adap-

tations in Nature, we cannot infer intelligent design, but only the presence of a power working blindly and unconsciously like the insect. We have already questioned the legitimacy of this position, and have shown how we are obliged to interpret all the adjustments in Nature through the medium of our own consciousness and mental experience, and how easily we can distinguish between instinctive and intelligent adaptations. But, if we come from nature to our own souls, we have the most irresistible evidence of Divine Forecast and free choice in—

1. Our consciousness of *personality*.
2. Our consciousness of a free, deliberative Intelligence or Reason in ourselves.
3. In the admirable and numberless adjustments and adaptations in the structure and mechanism of our souls—*e.g.* their faculties as compared with those of animals. They do not differ simply by superaddition, as would be the case in a system of mere progressive development. Some things are subtracted (instincts), others added (higher reason), and the occasion is manifest. Animals are made to be stationary; both individuals and Races move, from age to age, over the same horizontal plane; there is no improvement (except the most limited, and that from without, and through man's agency) either in the individual or in the species. But men are progressive; the individual, the Race, goes upward, and no limits can be fixed to its ascending advance. An inclined plane, which seems without a farther limit, represents its capabilities.
4. Again, compare the psychical endowments of the two *sexes*. The faculties and susceptibilities are the same in kind, but different in degree. On the one side, more robust strength of intellect; on the other, more quickness and sprightliness. On one side, powers better fitted for stern and violent effort; on the other, for patient and protracted endurance. On one hand, faculties and aspirations that belong to the workday

world without; on the other, affections, susceptibilities, graces that embellish the sanctuary of home. One has faculties that fit him to govern; the other, to make obedience a grace and a pleasure. Who can look at the different spheres which must be filled, without seeing that there must have been forecast and preadjustment? Suppose men were constituted exactly like women, or women like men, how vastly would the happiness and the glory of life be abridged!

5. Observe, again, the different elements in our humanity: the separate faculties and functions of the soul,—the intellectual, the sensitive, the æsthetical, the moral, the *Regal Will*, an *absolute Prince*.

Observe (*a*) how each is adapted to its end,—intellect to get knowledge, mental power, etc.

(*b*) How each is adapted to all the others, and all the others to each; how intellect helps the passions, the taste, the imagination, the conscience, and the will; how the passions help the intellect, how they discipline the conscience by opposition, or help it by co-operation.

(*c*) How each and all are essential to the healthy and beneficent working of the mind and of society. Take away intellect and leave the rest, or the passions and leave the rest, or the conscience and leave the rest, or the *will* and leave the rest—of the result we can judge by what we see when an individual is greatly deficient in any of these powers or susceptibilities, through congenital causes, through insanity, or through misconduct. He is a monster, a buffoon, or a drone.

(*d*) How the soul, considered as an instrument and as a whole, has manifold adaptations, will serve one purpose as if it had been framed only with reference to it, and yet serve others as if that had never been thought of. An instrument of human fabrication commands our admiration in proportion as it can subserve different uses, especially if it be at all complex in its mechanism. Hence the steam-engine is deemed a proud monument of human ingenuity.

Now, what are some of the uses of the human soul? To instance one: It is to give man dominion over all things terrestrial. To that he seems destined,—it is best that he should have it,—and he gets it in proportion as he applies mind, and cultivated mind, instead of brute force. Why have a few white men, in two hundred years, felled the great forests on this continent, driven out the ravenous beasts of prey, dispossessed the savages, reared cities and villages unnumbered, and spread cultivated fields where all was a howling waste? The answer is, they have used mind in the appointed way—*i.e.*: 1, thoughtfully; 2, with associated effort; and 3, they have enforced such effort with all the assistance that can be derived from past ages and different parts of the world.

CHAPTER III.

THE SOUL A WITNESS TO THE DIVINE BENEVOLENCE.

WAIVING further proofs and illustrations in respect to the Wisdom of God, we propose now to answer the fourth of the five questions already propounded in respect to the Divine Nature. Is God *benevolent*?

When men frame to themselves a Religion, under the influence of fear and hatred, we can well understand why it should represent God as a stern, ungracious, and even vindictive Being. So when they come to the consideration of it, under a deep sense of their own personal guilt and ill desert, this feeling, coupled with a corresponding idea of Retributive justice, and with no perception of a way of pardon, can hardly construct to itself the notion of a placable and benevolent Father. And even philosophical minds, if they occupy themselves with considering only the prevalence of natural and moral evil in the world, excluding all contemplation of the abounding provisions for physical and mental enjoyment, may easily reach the conclusion that the author of such a system, as they seem to see, must breathe war and hatred rather than Peace and Good Will towards men. But we are to ask what conclusions would be reached by a candid and unbiased mind, surveying the subject in the light of *man's* whole *mental constitution and condition*.

And here we observe that, in order to appreciate the full force of this evidence, we should distinguish between mind as we often find it, perverted, undeveloped, or debased, and mind as it came from the Creator. To ascertain the character of him who frames any system or instrument, we must take it

in its *original* or *natural* state. By this, in respect to man, we do not mean the barbarous and uncivilized state; for that corresponds less with the true nature of the mind than a state the most civilized. We mean, rather, that state to which the structure and economy of the soul evidently point as its *normal* or *healthy* or *perfect* state.

Important as this distinction is, however, we shall often waive it, and take Human Nature as it presents itself in the average course of life, and of the world.

1. Instead of taking the human soul in the gross, as an integer, we shall confine our remarks in this chapter to one class of its functions, the *emotional*, and to a limited and partial view even of them. We select the *self-regarding* and the *relative* affections and emotions, those which are usually but improperly called the *selfish* and the *social*—the one set urging us towards what appears to be for the happiness of ourselves; the other, urging us towards what appears to be for the happiness of others. We exclude the term *selfish*, because none of these susceptibilities is naturally reflective in its character, but they all act instinctively, and therefore without any clear discrimination between ourselves and others. To the *self-regarding* principles belong the animal appetites, the desire for power, for approbation, etc. To the *relative*, belong love of children, love of parents, love of friends, pity for the distressed, etc. We ask attention to *three notable facts* connected with this part of our mental constitution:—*first*, its twofold character,—there are two antagonistic tendencies; *second*, the *twofold* action of each tendency; and *third*, their *variable* force and character.

First. The twofold constitution of our nature in this respect. We have not only principles urging us to care for our own happiness,—for in that case we might sacrifice the happiness of others,—nor only principles urging us to do good to others,—for in that case we might do great or fatal harm to ourselves. By making us, through the self-regarding affections, vigilant guardians of our own enjoyments, and through

our benevolent instincts guardians also of the enjoyment of those around us, and especially of those most nearly connected with and dependent upon us. God has provided for the *maximum* of enjoyment and improvement to mankind, so far as it depends on their own voluntary agency. And Christ exhibits his profound knowledge of human nature when, shunning the two prevalent ethical systems of his time, the Epicurean and the Stoical, He struck the golden mean, and announced as the sum and substance of the Second Table of the Divine Law,—Thou shalt love thy neighbor *as thyself*. In these words He sanctions a like vigilant regard for *our own happiness* and for *that of others*.

But it has been said, why not regard the social or benevolent affections as *derived* principles, as built up out of the selfish principles, through education and a calculation of consequences? We answer,—

1. Because, in inferior animals, they are evidently original and instinctive, and if so in them, why not in human kind? for the parental instinct (to take an example) seems to be as necessary in the one as in the other.

2. Because an affection built on mere calculation would be unequal to the sudden and almost superhuman efforts and sacrifices to which we are called. A parent, for instance, if he were to reason on mere consequences to himself, might well doubt whether such efforts as he readily and cheerfully makes in behalf of children, were incumbent on him, for they go sometimes to the length of almost entire self-sacrifice for the good of the beloved object, and all, on the selfish theory, for what? A most doubtful result. The child may live only to be an idiot or a monster of deformity. He may be profligate and godless, and bring the gray hairs of his father and mother in sorrow and shame to the grave. The outlay of trouble is certain, the return most uncertain.

3. Because these benevolent affections possess and master those to whom they can bring no ultimate gain. Is a child

loved, watched over, cherished, only by its mother? Those who can get nothing, who have nothing from it or through it, are they, therefore, indifferent to its welfare? Look at the chamber in which it makes its entry on life! It is there the only mourner,—all eyes beam with hope, all hearts swell with joy and thanksgiving that a child is born into the world. If they *reflected*, they might pause, doubtful whether moral existence, with all its tremendous hazards and responsibilities, be indeed a blessing to the agent himself, or to those charged with the momentous trust of rearing him from weakness to manhood. *But they do not reflect.* They are possessed by that which outruns reflection, and compels them, in spite of themselves, to be the helpless stranger's friend and protector. It is armed with a power which far surpasses that of the most absolute Prince,—the power, the irresistible might of *weakness* and *want*. All hearts bow.* The rugged features of passion or vice relax. The brute of a father who, in his drunken fury, can strike a wife or mother, can he strike yonder sleeping innocent? The harp of Orpheus did not work such wonders in transforming savage beasts as are wrought by this unconscious little one. How all wants are anticipated, all dangers warded off, though at the expense of long nights of watching and long days of toilsome ministry! How the first smile is waited for, and what joy sheds its sunshine over the hearts of mother, sister, nurse, when that signal

* A beautiful and touching evidence of the power of weakness and innocence over the most rugged heart is mentioned by one of the British admirals who, a few years since, visited the small and defenceless community that has sprung up in Pitcairn's Island, in the Pacific, descendants of the few mutineers of the ship *Bounty*, who settled there:

“The islanders depended principally for their necessary supplies on the whaling-ships,—they are generally American. Greatly to their credit, they behave in the most exemplary manner, very different from what I expected. One rough seaman, whom I spoke to in praise of such conduct, said, ‘Sir, I expect if one of our fellows was to misbehave himself here we should not leave him alive.’ These people are guileless and unsophisticated beyond conception.”

of an awakening soul, that first dawning of an endless intellectual day, bursts upon the view! Yes, a soul, rational, spiritual, immortal, has been put in charge, perhaps, of hirelings,—perhaps of a foster-mother, who has this hope of some family for hours and days together by herself,—and yet the parents, the friends, rest securely, for they know that the common Father of all has taken care that that duty shall not be neglected. He has lodged in that nurse's heart a better guarantee than the hope of wages, or the fear of detection and disgrace; even an awakening love and compassion for her charge, that make him to her,—a what?—merely a young animal, like a *kitten*, a *lamb*? Is that all the tenderness she feels for this child, or is there not a mysterious, undeveloped consciousness that that animal form is but the casket of a priceless jewel, even the soul, and that she must be proportionably vigilant and careful?

There are, then, *benevolent* as well as *self-regarding* instincts* in man, and in both does the Maker of man show forth his *Benignity*: in the one, by making us provident of the enjoyment of those with whom we are in any social relation; in the other, by making us not less considerate of our own.

But, some one may say, are there not *malevolent* principles or instincts in Human Nature, instincts that inspire us with ill will towards others, and prompt us to make them the victims of our cruelty? Is there not *anger*? Is there not *revenge*? Are there not envy, hatred, malice, and all uncharitableness? We answer that most of these are not original sentiments; they are not instinctive principles of Human Nature. *Envy* is the flagrant exaggeration of a legitimate and beneficent principle, that of *Emulation*, just as *Hatred* and *Revenge* are abuses of *Anger* and *Resentment*. To take the two last as a specimen, when they are designated as *malevo-*

* The one we have noticed is but an example of all that class that have the immediate good of others for their end and aim.

lent, the common mistake is committed of confounding the legitimate use with the perhaps more prevalent *abuse* of a principle. Neither Anger nor Resentment is necessarily or properly vindictive. They are *punitive* or *preventive*. They imply displeasure at a deed; but that displeasure, though ever so strong, may be compatible with kindness and good will towards him who did the deed. A child grossly misbehaves, the parent is offended and chastises it; does it follow that he wishes ill to the child; that he inflicts the suffering with pleasure; that he gloats delighted over the spectacle of his writhing body, his mortified and terrified spirit? Far from it; he often strikes the blow or imposes the restraint with the deepest reluctance, and only because he feels that the blind impulse of his affections must give way before the claims of justice, and before high considerations for his child's permanent welfare.

And here we see the proper office of Anger and Resentment in the social system. They are *defensive* principles. The active desires and appetites urge us to get enjoyment,—the defensive, to protect that enjoyment against the encroachments of others, or to recover it when wrested away. Anger stands as an advance-guard, to anticipate and prevent an attack. The fear of rousing it often holds men back from wrong and outrage, which they might otherwise commit in spite of the protests of their benevolent or moral feelings. Resentment, less sudden but more deliberative, survives to keep alive a sense of the injury we have received, till we obtain by rightful means the redress due not more to us than to the great interests of society. The same feeling prompts us to come in aid of the weak when oppressed, and helps to reconcile us to that infliction of suffering which all punishment implies, but which we should often recoil from, with deep and invincible repugnance, if left to the guidance of nothing but our sympathies and social affections.

That these principles are peculiarly liable to abuse we

readily admit, and that abuse is most prevalent we admit also; but for this the responsibility rests not on man's Maker, but on himself.

Second. The next fact to which we would ask attention is that each of these affections has a *twofold office*,—the selfish operating not only directly to the advantage of the agent, but also indirectly to the benefit of others. (*a*) Take, for example, the love of *approbation*. It leads a man, through industry, through science, through professional labor, to reputation. But what kind of efforts must he apply? Precisely those, in a large proportion of cases, which most benefit others, society, the world. He must be, or at least he *must appear to be* (and, so far as our argument is concerned, it is the same thing), honest, temperate, prudent. If he be a student, he must *discover* or *illustrate* valuable truths. In every walk of life he must be *kind*, must *take care of his family*, must have some public spirit. What would we think of a man who undertook to win approbation by being openly and avowedly *licentious, unjust, oppressive, cruel, ignorant, useless*? True, impostors often get honor, but it is only through hypocrisy,—“the homage which vice pays to virtue,”—or because the splendor of their achievements, the talent which they imply, or the magnificent results which they secure, blind us for the moment to the true character of the actor.

(*b*) On the other hand, take a benevolent affection, such as *pity for the wretched*. Here is a man who is impelled (we will admit, for the sake of argument) *alone* by this one sentiment,—not, what shall I eat, or what shall I drink, but to how many of the sons or daughters of sorrow can I serve as eyes for the blind and feet for the lame,—from how many cheeks can I wipe away tears,—how many hearts can I cause to sing aloud for joy? Is such a one a minister of good only to others? Does he get none to himself? Is there not such a luxury as the luxury of pitying and relieving? Compare it with the luxury of doing evil, inflicting suffering, if such a

luxury there be. Which spreads most sunshine over the heart, warms and cheers it most, *loving* or *hating*? We have heard of hating cordially; but we much doubt if it be a cordial to the heart which hates. The world, judging alike through observation and consciousness, has told us what this viper does to the bosom where it is cherished. *Rankles, festers*,—these are the words that describe alike truly and forcibly its reflex influence upon the minds that harbor it.

Again, does he get no happiness from the gratitude—too deep, perhaps, for words, too deep, it may be, for tears—of those he succors?

Again, does it win him no friends,—not among the objects of his beneficence only, but among all who are spectators of it?—none who are impatient to serve him?—none who, in the day of his adversity, will work for him and plead for him? Let politicians and demagogues beware of him whose heart beats warmly and strongly with love to his kind, and, above all, with pity for the suffering. Without knowing it, he has adopted a line of policy, a system of tactics, more comprehensive and more potent than theirs; and unless they are on the alert, unless they affect to be as he is, and even more, he may chance to be preferred before them. Certain it is that the people, if left to themselves, would be violently inclined to take him by force and make him a king, and they would be slow of their own mere motion to make any one a king who did not wear something of his likeness. Think of men *honoring* and *cherishing* a bold, bad man, who glories in his wickedness, who exults in being *selfish, unprincipled, profligate, sensual!*

(c) But, again, there are *principles of a mixed character*, partly self-seeking, partly self-imparting. Of this nature, as we conceive it, is the desire of gain. We cannot agree with most writers on Political Economy, in regarding this as a mere desire to get something for ourselves,—an assumption which rests at the bottom of their theories, and has contributed not a little

to impart a harsh and narrow character to many of their conclusions. When a man labors for gain, does he think only of himself?—nothing of his family, to be supported or educated or established?—nothing of his friends, to be entertained?—nothing of giving to him that lacketh?—nothing of being useful in his day? Men have, doubtless, very different motives; with some the motives are very sordid; yet we take, as it seems to us, a most partial view of human nature if we do not recognize the existence generally of some of the elements which we have mentioned in addition to that which is purely selfish or self-regarding.

As a mixed principle, look at this desire of gain,—first on its rational and secondly on its instinctive side. On the first it urges towards an increase of the possessions of one; on the second, towards a course, in order to this end, which must conduce to increase the possessions and the comforts of others. A gainful calling, if it be an honest one, does not enrich A by impoverishing B and C. It does not merely transfer from one pocket to another. While it brings profits to the capitalist, it distributes wages among all the laborers and agents. While the laborer, by his industry, puts money into his own purse; he helps also to put money into the purses of all who co-operate with him, whether as artisans or proprietors; for value once created can hardly serve one person without serving others; so that while the agent may think only of gain to himself, he is made an unconscious, effectual, instrument of blessing to others.

Take the supply of food for a great city. What a problem if it were worked out by human wisdom! How easily solved by Divine foresight through the same instinct of gain!

Third. Consider how these principles vary in and form with emergencies. *E.g.* The parents dormant, perhaps, or more, in a poor or fashion. But a child is born. Is it *neglected*?

One child of many is sick or lost. Do not all thoughts and affections cluster about it? They leave the *ninety* and *nine* and go after that which is ill or astray.

The child grows older,—needs different treatment; the instinct varies, until, at length, he is a man. The father no longer supports, but is supported; the instinct is not dead, as it would be in animals, for it is needed—needed for the child, needed for the parents.

By-and-by it takes a new form. Grandchildren are born, perhaps in the same house. How instinctively does the sentiment adapt itself, and what a blessing!—*To the old*, (a) to enliven and cheer, (b) to enable them to live over their own childhood—the pleasures of memory and the pleasures of hope, (c) to keep a warm place and warm hearts for them when otherwise their welcome might wear out. Old, querulous, feeble, a burden, perhaps, in one sense,—they present their appeal: 1, as benefactors once; 2, as dependents now; 3, as friends and companions to the little ones.

To the children. What friends so salutary as the old, with their experience, their chastened views of life, their large fund of anecdote,—a little wandering and prolix, but just the thing for a child,—their calmness of spirit, now that the toils of life are over, their returning faith in God!

Suppose men were born in full maturity, and died so; no childhood, no old age, no youth, but all manhood!

CHAPTER IV.

THE SOUL A WITNESS TO THE BENEVOLENCE OF GOD.

WE offer a few additional illustrations of Divine Benevolence derived from the constitution of the human mind, premising that in illustrating the *Benevolence of God* we illustrate also, as I have said, *his Wisdom and his Power*, since we do not adduce laws and adaptations that are merely tentative, but those that have been, as our own consciousness and experience proclaim, most triumphantly achieved. In contemplating them we behold at once the *Goodness* that conceived, the *Wisdom* that arranged, and the *Power* that executed.

We appeal especially to phenomena presented by our nature in its ordinary state, and when directed by the combined action of its native instincts and capabilities on the one hand and of surrounding circumstances on the other. To resume :

3. Consider the *variable character of all our powers and susceptibilities* through which their intensity proportions itself to the emergencies of the agent. In the language of mathe-matics, these principles are not constants, but variables. but have already seen that this is the case with the *parental instinct*, and have noticed some of the results of a law, blem, thus secures that one most powerful element of sympathy when nature should lie dormant, or be aroused to ir-itive love energy, or otherwise modify its action, according mands upon it. Were such a power to have ful their force there was no occasion for it, it would be a toral instinct is if it were to direct the same sort of treatmenable family. towards a son or daughter of mature age.

infant in the cradle. Such modifications, observe, are not the result merely of deliberative effort on the part of the parent, but are in a great measure instinctive.

Now, observe how the same law holds in respect to our other powers. Take, for instance, *Desire*, and mark how it varies with the *obstacles* which arise in the way of its reaching its object. A child preferring a request to a parent, may be met with a feeble objection, with a hesitating refusal, or with a peremptory negative,—the last known, by the child's experience, to be unalterable. In the first two cases, a desire, faint at first, is excited and exasperated; in the last, it is forthwith, and almost entirely, extinguished. Or, to take another instance, David prays, and fasts, and mourns while the child lies sick, but arises, washes his face, and calls for meat when the child is dead,—a touch of the sacred historian, which shows how far the truth of the Bible transcends the compass of ordinary invention. A writer of fiction would have been likely to think, with the servants of David, that his appropriate course, when the child died, the course which his former conduct would seem to dictate, would be to refuse all comfort and renounce all food. But the deep desire of the king's heart, that the child should live, was now paralyzed, because gratification had become impossible. Nature, in her truth and simplicity, taught him to act a part which no tame composer of a fictitious history would be likely to conceive, and hence in this, as in many other instances, we see intrinsic evidence that the sacred narrative is true.

Here, then, is a great principle: *slight impediments inflame desire; insurmountable impediments repress and all but extinguish it.* And is not the final cause obvious and most benignant? Man was made to attain to inward excellence, to outward good, and to satisfying happiness *through effort*; and the greater the effort, within due limitations as to the object and the degree, the greater the blessings compassed. Did slight impediments extinguish desire, hardly any efforts would

be made. Did insurmountable efforts inflame it, the mightiest efforts would be expended on the most unattainable objects. But by the law, as it now stands, both evils are avoided, and the highest benefits secured. Desire rising with the effort required, such effort is thereby made more easy, and almost superhuman strength is put forth, not only without pain, but often with the most exquisite pleasure. Let this law teach us that "difficulties are, indeed, our helpers."* Let it teach us how greatly we err when in training the young or serving those we love we strive to withdraw all obstacles from their onward way, thus condemning their desires to languish, their active powers to stagnate, and their hearts to pine and sicken for appropriate stimulus.

This *variable character* of our emotions—a variableness through which they carefully adjust themselves to our wants—may be seen, again, in *Fear*. At the beginning, fear is an alarm-gun. It acts upon us with explosive force, and the first impulse we feel is to *fly*. But the thought arises, that the danger we thus shun may be less than that into which we shall rush, if we become fugitives,—danger, perchance, to our persons, perchance to our reputation or our virtue, perchance to the lives or well-being of those we fondly love. Hence fear is, in a measure, repressed. From *flying*, it puts us upon averting the impending evil. Reason suggests and weighs means. Some of them are adopted. And then the will hastens, under the influence of fear and hope, to apply them. How soon are the thoughts and designs of the mind engrossed in the use of these means! Fear, as a principle of terror, paralyzing or urging only to flight, disappears, and we come by degrees almost to relish, sometimes even to exult in, the danger which was at first so appalling. But, look again: the die is cast, the battle is lost, the ship sinks, the doom of bankruptcy is sealed, and then, fear resuming its earlier char-

* Burke.

acter, our main impulse is not to master, but to avoid, the danger. Or there may be cases in which the helplessness of terror may be for us the best and safest state of mind, and then how quickly does it manifest itself! For instance, a hunter in the grasp of a tiger is safer making no resistance, no effort even to fly, seeming as if dead, than in any other way. Need we dwell on the beneficence of these arrangements?

Take, again, one or two instances of the operation of this law from the *Intellectual part* of our *Constitution*, and mark the variations which characterize different periods of life. Take,

First, *Memory*, which displays the Benevolence of the Creator, by its general propensity to shun the painful and to dwell only on the pleasant in our past experience. This propensity operates without check in childhood, thus securing that the retrospective acts of the mind shall at that era be mainly a source of enjoyment. In manhood and middle life memory has a different office than that of merely supplying enjoyment or collecting materials for fancy and imagination. The mind has to battle with difficulties by the light of experience, and that experience will be a safe and salutary guide in proportion as it avails itself of the mistakes and the sins of the past; and hence, at this period, the scenes which pass spontaneously before the mind are of a more mixed and subdued character,—the spectres of our former errors and offences, with their consequent sufferings, come unbidden across our path, and point, as if with monitory hand, towards a better road.

But how is it when manhood declines into old age? Memory leaves the painful of the past, in a great measure, and settles down on the morning, the springtime of life. It has now less need of painful remembrances to be its guide and monitor. The time for action has mostly passed, the time for submission and patient waiting has come, and the old live over again the sunny days of their childhood and youth.

the victory passes to the side of good. 4. The triumph finally and completely won.

So with Aristotle. His Ethical writings are almost exclusively occupied with the problem, "*What is virtue?*" or, in other words, *Who* is the *model man*? His definitions, "Virtue is the harmony of the soul," "Virtue is mediocrity," like Plato's disquisitions, proceed on the idea that the perfection of humanity implies the ascendancy of the moral element in our nature, gained through struggle with temptation and difficulty. The *golden mean*, where virtue dwells, is not self-evident; nor is it to be attained without effort and self-denial. It is not equidistant from the two extremes, as in Geometry, but is to be found by inquiry and trial, varying for different individuals, and to be maintained only through perpetual vigilance and assiduity. Here, then, are sages who wrote without Revelation, without the enlarged experience of humanity which we enjoy, and yet how clearly did they discern the truth for which we contend!—that perfection is possible only for those who listened first to the voice of duty, and whose highest ambition it is to become perfect as God is perfect, by becoming holy as He is holy.

The same conclusion will be forced upon us if we compare such characters as Hume and Chalmers, Napoleon and St. Paul, Socrates and Jesus of Nazareth. The qualified approbation or positive disapprobation which we extend in the one case, and the profound reverence and cordial admiration which we bestow in the other, prove that the good only are truly great, and that there can be no complete and perfect character without the ascendancy of moral principle.

2. Another end towards which the energies of our nature may be directed is, the promotion of material interests by the *acquisition* and wise *use of property*. Under no circumstances will this be done so rapidly and effectively as when the sense of moral obligation is paramount. The individual *accumu-*

(c) The consideration of the mind, as an *instrument* for the attainment of certain ends. If we can show that its *instrumental efficiency* will, in each case, be increased in proportion as the spiritual and moral power is allowed to preside and give constant direction to its efforts, we shall have the strongest evidence that man was made pre-eminently for duty, and that his moral nature demonstrates, in the most impressive manner, the Holiness of his Creator. We select four ends as legitimate in themselves, and as those to which we may suppose the energies of the soul to be directed:—1. The attainment to a *perfect Humanity*. 2. *Material welfare*. 3. *Intellectual excellence*. 4. *Æsthetical excellence*.

1. To attain to the *perfection of humanity*, we must give pre-eminence to the claims of Morality and Religion,—*i.e.* the first question must be, *what is duty?* and the will, enlightened by reason and directed by conscience, must enforce, promptly and imperatively, what duty claims. We are so constituted that we cannot but demand the beautiful and perfect in human character as well as in Nature and Art. We are urged by an inward impulse to construct the conception of the perfect man, and to strive perseveringly in our own persons after a corresponding Reality. The ancients, especially in Greece, were possessed with this idea, and in the Republic of Plato we have his views of the humanly perfect, both as it respects the individual and the state. His good man, with a nature duly developed and wisely ordered, is a man who “fears nothing that ought not to be feared, but fears whatever is deserving of fear.” His great excellence lies in an *internal spiritual force*, which is at once the fruit of past triumphs over evil and the guarantee of like triumphs, and nobler ones still to come. He describes four moral states, through which the souls of most men pass before they reach the stature of a perfect humanity:—1. *Licentious self-will*. 2. A conflict in the soul between good and evil, in which the evil triumphs. 3. A like conflict, in which

That we do not err in assigning pre-eminence and *sovereignty* to the moral and spiritual in man, will be evident not only from what we have previously said of the supremacy of conscience, but also from the following, among other considerations :

(a) The *insufficiency of all other principles* to the control and direction of the soul, without hurting it. The passions are blind and reckless if left to themselves. When combined with intelligence and reflection only, they generally use them to secure gratification for one or two master appetites, through which their possessor (at once possessor and slave) is driven to sin and misery. Even the most enlightened self-love proves inadequate, from its narrow views of what constitutes true mental welfare, and from the insidious tendency it manifests towards a sordid spirit.

(b) The unanimous judgments of mankind in regard to certain men whose names are famous in history, and their divided judgments in regard to others. All mankind are unanimous in admiring, and not only in admiring, but also in venerating, the names of Washington and Alfred the Great. They are not less unanimous in execrating the memory of a Cæsar Borgia or a Catiline. In respect to Oliver Cromwell and Queen Elizabeth, they are divided, and the reason is, that, in the first and second cases, there is certainty as to what was the predominating motive and spirit of the actor. Had there been a doubt in respect to the incorruptible integrity, the true public spirit, of Washington, his name would not have so served in every heart as the watchword of true greatness. Nor, on the other hand, if the true character of a Borgia or a Catiline were doubtful, would they be the objects of such universal and unmitigated abhorrence. These instinctive and unanimous judgments, coming up from the depths of men's hearts, proclaim how unavoidable is our conviction that the moral and religious in man should be paramount not only in name but in fact.

CHAPTER VII.

THE SOUL WITNESSING TO THE HOLINESS OF GOD.

Continued.

HITHERTO we have considered only the *moral constitution of man*. We propose now to consider the *whole mind*, with special reference to the light which it casts on the moral character of God, and on our own duty and welfare.

The human mind exhibits various powers and susceptibilities, which seem to be so far independent of each other that one can be inactive or diseased while the others are in healthy action. With the control of all these powers we have been charged, and also with the duty of so regulating, developing, and improving them that we shall attain the utmost possible excellence. This duty is too little considered, and it is due to the ancient philosophers to say that in many of their speculations respecting the *chief good*, the *harmony of the soul*, etc., they exhibited larger and juster views than most modern writers. Bishop Butler, in his Sermons on Human Nature, and in the Preface to them, has shown that he apprehended more clearly the terms and importance of this Ethical problem.

There are four principal powers or elements in the Human Soul :—1. The *Spiritual*, including the Moral and Religious. 2. The *Intellectual*, including *Reason* and *Understanding*. 3. The *Will*. 4. The *Sensitive or Emotional* element. We have already intimated what we conceive to be their respective functions—the first, being supreme and authoritative; the second, informing and advising; the third, imperative and executive; the fourth, motive or impulsive powers.

instincts and convictions, protesting against abominations which a false Religion would tolerate.

The Protest is not always silent. When the corruptions accumulate, and are such as to give a violent shock to the moral sensibilities of men, their disgust and abhorrence may find utterance through some bold Reformer like Socrates, Arnold of Brescia, Wickliff, or Luther. Their appeal is from a corrupted moral and religious sentiment to the natural and ineffaceable moral convictions of men. And in those convictions lies their strength. Power, Interest, Prejudice, Learning may all be in array against them; but they have that with them which is more authoritative than all these. While they plead, the still, small voice within the hearts of those who hear pleads also. From being dormant, or in league with a corrupt religious faith, conscience comes into line with *religion pure and undefiled*, and the result is sure and speedy. Was it not so with Jesus of Nazareth? He was a Reformer, and to what did He make his appeal? He was not religious enough for the Scribes and Pharisees. He did not disfigure his face that He might appear unto men to fast. He sounded no trumpet before Him when He gave alms to the poor. The Sabbath He did not keep according to their rule, and the tithe of mint, anise, and cummin He would not away with while justice, judgment, and mercy were withheld. Yet how did the spectral forms of hypocrisy and formalism vanish from before Him! How did the common people hear Him gladly! Let them be hopeful, then, who plead for the right,— who, in challenging homage for God, show that He is a holy, sin-hating God. But let them fear if the attempt be to sustain a Religion which tolerates immorality. They thereby array against themselves a power which will one day consign it, with all its pomp and pride, to the contempt and detestation of men.

principles of our nature, may be seen in various forms of Pagan superstition, and in the corruptions of the Religion of the Old and New Testament. The Rationale of these corruptions, considered in their origin, may be seen by taking three varieties,—(a) when the religion is the product, jointly, of the religious sentiment, of intelligence, and of sensuality; the result being a luxurious and pompous religion, employing the lower forms of art, appealing to the imagination only through sense, repudiating moral instruction, and delegating to the priesthood only, rites, pageants, and processions.

(b) When it is the product of the religious sentiment of intelligence and of a more æsthetical spirit; the result being a more contemplative and sentimental worship, allied to a higher art, but inoperative in practice, without stern purpose or clear and commanding instruction in duty.

(c) When it is the product of the religious sentiment, with a large infusion of the malevolent feelings. The result is a system *exacting, sensual, persecuting*.

Once formed, either of these, when accepted by a *traditional* *faith*, may call in *conscience* to uphold and defend it, and to propagate it with fire and sword.

But while conscience, operating among the vulgar and unreflecting, under the direction of an artful Priesthood, may uphold a corrupt religion, the same faculty, in the hearts of the more reflecting or the more pure, *remonstrates* and opposes. The remonstrance may be silent, but it is not wholly ineffectual. Hence the people, living under a corrupt Religion, are often less corrupt than one might anticipate. Who would have expected chaste Lucretias among the worshippers of the unchaste Venus, or continent men, like Xenocrates, among those who celebrated the debaucheries of Jupiter, or intrepid Romans among those who paid their devotions to the goddess of Fear?* It is the fruit of conscience, or our moral

* Rousseau.

antee against *future* dereliction, this must be supplied by a *Religion above Nature*, by one that comes directly, and for this express purpose,—even from God.

(c) We come now to consider a few cases in which *Conscience* and the *Religious Sentiment* fail to co-operate. What are the consequences? The first effect is the weakness of each. Without a sense of religion, conscience will, of course, urge us with insufficient power to the worship and service of God. It will be feeble, too, in respect to our social and relative duties, when not enforced by a sense of the Divine Presence and Authority. So, on the other hand, without an active and enlightened conscience, the religious sentiment will exhale in sighs and poetical visions, in myths and dreams, or in high but unfruitful speculations on the Philosophy of Religion.

Another effect will be seen in the injury to the general interest of practical Religion and practical Morality. On the one side, the moralist, who repudiates the religious sentiment, will be likely to repudiate religious duties, restricting morality to a mere recognition and discharge of our relative obligations. Beginning with a mutilation of the truth, it is but natural that even in that which he retains his views should be *partial* and *superficial*. Recognizing some duties, but neglecting others, and being more intent on their *external* appearance than on their *internal* character, he may pay his debts, and yet not spare some of the most sacred rights of his neighbor, such as rights of reputation, of feeling, of virtue.

On the other hand, the religious man, neglecting morality, may do deeds that angels might weep over; offering tithe of mint, cummin, and anise, but neglecting the weightier matters of the law; hating his brother while he is persuaded he loved God; full of wrath and uncharitableness, but thinking it only zeal for the service of the Most High.

The malignant power of the religious sentiment, when divorced from conscience and leagued with some of the inferior

(b) On the other hand, *Conscience aids the religious sentiment* by imparting to acts, strictly religious, a MORAL character. It urges us not only to worship, but to worship such a Being alone as is worthy of our adoration. It prompts us to remember the moral Perfections of God, and to be careful lest we offer Him oblations which He must abhor,—the fruit of fraud or oppression,—the mere homage of the lip or of the body,—voluntary humility and will-worship,—a multitude of sacrifices, but little of justice, judgment, or mercy.

Observe, here, that the path to which *Conscience* and the *Religious Sentiment* urge us, is the very same to which we are pointed and urged by Prudence. The duties to which we are summoned are at once *right, holy, and expedient*. Thus in his goodness has God accumulated motives for us to be holy as He is holy. Thus in his righteousness hath He hedged us in with imperative commands, coming alike from *conscience*, from the *religious sentiment*, and from *self-interest*; so that, if we obey not, we are sinners in a threefold sense against our own souls as well as against the Most High.

But what is the effect of such commands and motives? Are men living as becomes them? Alas! it has ever been the great complaint of the wisest and best of our race that what they would not that they did, and what they would that they did not. They have united—the purest and the largest minded—in confessing that, if they master their evil appetites and live as becometh worthy members of society, they have reason to own that it is “God that saves them.” A sense of moral weakness and insufficiency, a sense, too, of guilt before the pure and perfect Law,—are not these found in every human heart that attentively considers its own state and duty? And this mournful failure, this sense of guilt, attested by every altar that smokes, and every priest that intercedes, is evidence that we need more than *natural*, even *supernatural* strength. That which the *Religion of Nature* cannot supply, indemnity, reparation, remedy for past delinquency, and *guar-*

and inconceivable as that God is, how can man render it? The religious sentiment meets this question by causing us to feel the presence and majesty of the *Invisible One*, and by imparting at once a glow, and a self-sacrificing depth and force to our homage. It seems to discharge, in respect to our religious duties to God, something of the same office that is rendered by a chivalrous sentiment of self-respect and magnanimity in regard to our own social and relative duties.

3. To *actions not specifically religious*, this sentiment serves also to impart a quasi-religious character, since it leads us to recognize God in everything. When we open the New Testament, we read that whether we eat or drink, or whatever we do, we are to do all to the glory of God. At first sight this requirement strikes us as somewhat strange and unreasonable; and yet, when we consider that God dealeth with us as with children, that we are his offspring, living, moving, and having our being in Him, and indebted to Him as no earthly child can be to earthly parent, who does not recognize the obligation of remembering and honoring God in all our ways? A son, if pious and ingenuous, will feel that in acts not pertaining strictly to his filial duties and relations, he should still respect the slightest wish of his father; 2, he will also feel that, as the son and heir of such a father, he should do nothing unworthy of the nobleness of his lineage; 3, that as a son, too, he should, when acting in the presence of men, be jealous of his father's fair fame, and avoid whatever could tarnish it; and 4, that to all sensitive creatures formed by God, and objects of his kind and unwearied care, our hearts should go out in love and tenderness, because they came from Him at first, and are still his own. Over and above what we owe to them as men or as animals, we owe them much as creatures of our Father in heaven. Love thy neighbor as thyself, the second commandment of the Law, is indeed like unto the first: "He that loveth God, should love his brother also."

sensible,—beyond the changeable and ever fluctuating to the Eternal,—beyond the human to the Divine. As an instinctive and original principle, it does not define and set forth distinctly its own object. The nature and attributes of the Divine Being must be the subject of inquiry, and to that inquiry both natural conscience and the religious sentiment urge us to apply our understanding and reason. The result is the knowledge of a God who is from everlasting to everlasting, who is also holy, just, and good. As a Holy Being, He deserves our reverence. As a good and gracious Being, our Benefactor and Father, He merits our gratitude; and as possessing these perfections in infinite measure, directed by Infinite Wisdom, and operating with Infinite Power, it follows as a clear conviction of conscience that our Reverence, Adoration, and Gratitude should know no bounds, and should burn with intense and undying fervor. "*Love the Lord thy God,*" is but the expression of that law which bids us honor the good and love those who are kind to us. "*Love the Lord thy God, with all thy mind and soul and strength,*" is but the necessary result of that law, when connected with the fact that Divine Perfections are boundless as compared with human, and should be the objects of a corresponding order and depth of adoration and love. The action and reaction of the *moral* and the *religious* sentiments, with respect to each other, are well worthy of study. We touch upon three phases merely,—(a) when they *co-operate*, (b) when there is *deficiency* in the one or other of these sentiments, and (c) when they are *antagonistic*.

(a) *The religious sentiment aids conscience*,—1. By prompting it to *investigate* the character and requirements of God; it does this in conjunction with prudence. 2. By giving to *religious duties*, which conscience recognizes, an urgency and an awful consequence which they could not have if viewed by the light of Reason and the moral sentiments alone. These would tell us that God deserves honor; but, invisible

is in respect to the connection between the *volition* and the preceding state of mind commonly called *motive*. On one side it is held that the volition is determined absolutely by the motive; on the other, that it is determined absolutely by the agent. The truth here probably lies, as on other questions, not far from the mean. When a certain state of mind is induced, we know by the laws of Psychology that a certain volition will in all probability follow. Were it not so, the conduct of mankind would be regulated by no rule, and calculation in regard to it beforehand would become impossible. But though the will may not resist a certain impulse when once it is communicated by our emotions, yet we can foresee the recurrence of those emotions, and by modifying the current of our thoughts, can either prevent such recurrence altogether or can greatly reduce its effect upon the mind. We find our thoughts or footsteps carrying us to the scene of moral danger,—may we not arrest or turn them aside, and thus shun a temptation which we might not be able to resist? Our consciousness proclaims that we can, and our reason declares that without such power the actions we are said to perform would not in truth be ours, but would be attributable to a previous condition of mind into which we had been brought by the fixed and uncontrollable laws of our nature. As such they could have no *moral* character, and could never charge those who perform them with the responsibility of moral agents.

There is, then, such a thing as Moral Liberty, and it points distinctly to the existence of *Holiness in the Deity*, because it proves that He has made man *capable of Holiness*, while our preceding illustration shows that He has made him *to be holy*. Could less than Holiness in his own nature have led God to exact Holiness so imperatively from his intelligent creatures?

2. *The religious sentiment in Man.* It leads beyond the natural to the supernatural,—beyond the sensible to the super-

to some god was deemed so holy that intruders, even though ignorant, were regarded as criminal,* so we, if we have innocently and unconsciously been the occasion of great harm to another (for example, have taken a life), should feel a qualified sense of criminality, and should not content ourselves till we have made all possible reparation. Take, for instance, the *benevolent* and *malevolent* affections,—the first need spurring, the other, checking. Were men judged of by their intentions alone, the former would want one strong motive for fulfilling kind and generous purposes, the other, a strong motive to restrain dangerous passions.

5. And finally, where the law does work hardship and apparent injustice, it serves to turn our thoughts and hopes towards another and a better distribution of Rewards and Punishments.

THE WILL AND THE RELIGIOUS SENTIMENT.

To complete our view of the *Moral Constitution* of Man, and of the light which it reflects on the *Moral Character* of the Deity, we notice very briefly :

First. *The Will*, and

Secondly. *The religious sentiment in Man*.

I *The Will*. It is this which gives us personality, being the source of that which we call most properly our own, and in virtue of which we possess and govern ourselves and become responsible.

The Metaphysical question, so often raised and discussed, in this connection, does not refer to the freedom of our *actions* but to the freedom of our *wills*. Volition is necessarily followed by the action decreed, unless a force *ab extra* prevent, in which case we are under a physical, as distinguished from *Metaphysical, Philosophical, or Moral* necessity. The real issue

* Adam Smith's *Moral Sentiments*, vol. i. 270.

another, whose motives were innocent, shall be adjudged criminal for acts which were casual; and a third, whose motives might have been positively bad, shall be applauded, because the results of his actions have proved auspicious to himself and to others. This has been ever the complaint of virtue. The tragic interest which invests the story of Oedipus and Jocasta turns on it. It has been thought to impeach the justice of Providence; yet further examination and reflection will teach us not only to acquiesce in the wisdom of this law but to admire its benignity.

1. For, in the first place, success *is* the only available criterion in many cases. We cannot see the hearts of men, and can judge of their intentions only by their acts. The act creates at least a presumption in respect to the motive, which must be rebutted before we assume another and a different one.

2. This arrangement tends to chasten that presumptuous self-confidence which men would feel if they could get glory for their mere designs, rather than for their achievements. Men, too, are not omnipotent, and they should remember it, lest pride intoxicate them, and they miss of success because they do not dread sufficiently the disgrace of failure.

3. It constrains men to that course of action which is no more than duty, but which is too often disregarded, viz., not to attempt that which bears no proportion to their powers, nor in any attempt to neglect the proper means of success or due diligence and care in applying those means. It is well that men should be kept from recklessness in respect to the *means* they adopt to reach even the best end. While we have no respect for an Expediency which would supersede virtue, we honor that wise consideration of consequences which recognizes the duty of hazarding no great end by a bungling or intemperate use of the appropriate means.

4. This law throws a kind of sacredness over the happiness of others. As a soil consecrated in ancient Greece or Rome

and for the mind as something better and higher than the material or animal economy, they are auxiliary to Conscience. We would speak now of what we call the *sense of honor*,* and which may be said to be compounded of *Self-Respect*, *Magnanimity*, and *Moral Taste*. Its office is to distinguish between dignity and meanness,—to point out what in actions is graceful, noble, and appropriate, and what sordid, mean, and unbecoming. It acts directly, inspiring us with a simple sense of what we owe to ourselves. It acts also indirectly, through a supposed impartial spectator, animated by the same nobleness of soul, and whose judgment, as being more unbiased, we use to rectify our own. To such a spectator we refer, in imagination, when we are in solitude; still more when in society.

And the regard we have to it will tame and subdue violent passions much more than considerations merely *prudential*. Thus, for instance, Anger, repressed from considerations merely selfish, is apt to burst out with accumulated force; whereas anger, cooled down by reflections on what we owe to ourselves, or while conferring really or in imagination with a friend over our grievances, is apt to be effectually tempered and allayed. How this sentiment aids conscience and sets forth Divine Holiness we need hardly say.

3. Another principle or law of our nature may be taken as powerfully auxiliary to Conscience. We refer to what, at first view, seems to be a great anomaly in respect to our moral judgments. It is this: we all admit that an agent's character in any case is to be judged of by his motives, and his action by its moral quality determined by the relations in which the agent is placed. Yet an agent whose motives are most benevolent shall receive no praise—nay he shall incur blame—merely because his benevolent plans have failed; while

* We speak not here of the conventional sense of honor, which has much more consideration for what is required by the perverted judgment of those in our rank of life than for what is really due to us on any principle of self-esteem or any consideration of the opinion of the good and wise.

But there is another great and much-neglected fact through which Conscience derives further aid from Prudence. Experience teaches that he is most happy who thinks most of duty and least of enjoyment. Compare a man bent on mere happiness, through exemption from care and labor, with him who is bent on doing his duty in that state in which Providence has placed him. Or compare the man of pleasure with the man of high and generous enterprise, or the man of ambition with him of pious and active beneficence. Hence true and enlightened wisdom will consider, "If I devote myself to seeking happiness, I shall be likely to miss both happiness and duty; but if I devote myself to doing right, I shall at once compass the right and the expedient,—the greatest virtue and the greatest felicity."

In thus employing the coincidence of *virtue* and *utility*, we would guard carefully against the idea, already noticed, that we consider them as identical, or that the one is the ground and reason of the other. Right and utility must have different meanings, otherwise many current propositions (such as "virtue is expedient") would be identical and unmeaning. The notions right and useful must be essentially distinct; otherwise it would be immaterial which of them we made predominant in our active life, whereas we have just seen that it is far from immaterial. The mistake of confounding virtue and utility is the common one of mistaking a final cause for a stated antecedent or philosophical cause.

2. We speak now of that sentiment which we term *Regard for the becoming in man*. Something tending towards it we see in the sense of delicacy as between the sexes; in the sense of propriety and neatness as to the person; in the sense of moral force, which renders it unworthy of us to dread or complain of physical evil. The history of Laura Bridgman shows that all these are instinctive, and I need hardly insist that, tending as they do to strengthen chastity, to inspire consideration for the body, as the shrine of the mind,

CHAPTER VI.

THE SOUL WITNESSING TO THE HOLINESS OF GOD.

WE shall derive our illustrations in this chapter from certain principles which may be considered as *auxiliary* to Conscience. In a well-regulated mind, every faculty and affection will be made to subserve this purpose; but it is the special office of those we shall notice to do so. These are,—
1. *Prudence or Regard to our good on the whole.* 2. *Honor or Regard to what becomes us as men.* 3. *Our judgment of actions as affected by results.*

1. Prudence is a *rational* principle, prompting us to arbitrate among our appetites, passions, and susceptibilities, so as to deduce from them the maximum of enjoyment. It is also a *legitimate* principle, since to have care for our happiness is both our right and our duty.

Is it asked how prudence is auxiliary to conscience? We answer, by availing itself of the fact that what is right is also, *on the whole, for our happiness.* 1. Sometimes we can much more easily ascertain what is right than what is, on the whole, expedient. Then this fact comes in for our encouragement, assuring us that in following the right we shall not only do our duty, but also ultimately gain enjoyment. 2. Sometimes, again, we can better ascertain what is *expedient* than what is *right*, as in the case, for instance, of polygamy or adlibitive divorces. Here the expedient, ascertained either by our own experience or by that of the world, becomes the index of the right; and Prudence aids Conscience by furnishing it, in doubtful cases, with both a criterion and a motive. In these cases, the two principles are mutually auxiliary.

1. That this is *supreme* would be apparent even from our own *consciousness*, which tells us that among our different impulses that which points to virtue is the highest. We cannot but feel that the right should ever be preferred before the expedient or the pleasurable.

2. So when we look on others we cannot but feel that the impulses under which they act, whether sensual or sordid, or virtuous or benevolent, are of different degrees of dignity; that the highest in rank are those which conscience approves most, and that these, though the feeblest in strength, should still command their preference and be first obeyed.

3. When we look retrospectively on our conduct, who ever condemns the right that he has done, or rejoices in the remembrance of the wrong he has been tempted to commit? That which he has gained by sin or lost by well-doing, may lead him to doubt the expediency of virtue, but it never leads him to doubt its sacredness and majesty.

lines on the soul are. He who is the bond-slave of vice still loves, at times, to escape from the base actual to a fairer and purer ideal world.

There are few men, then, who embrace evil as evil, love it as evil, glorying in their shame. Iago might. The Devil does. Hence Milton errs, we think, from the line of Scripture, though most true to ordinary human nature, when he represents Satan as feeling remorse, and shedding even compunctionous tears, as he surveys his companions brought to misery through his guidance. The Devil is everywhere presented to us, in the book of God, as possessed and governed by unmitigated malignity, scorn, and fraud. But even Iago and the Devil, when they would influence men to do wrong, *must needs play the hypocrite*, thus rendering homage to the indestructible power of conscience, and foreshadowing as harbingers the day when it is to awake, and, clothing itself with all its native power and integrity, vindicate by its retributions the Holiness of Him whom it honors now even in its apparent aberrations. "Conscience," says Shakspeare, "is a thousand swords." Those swords may sleep, sleep long in their scabbards. But they are not rusted. Occasionally they gleam for an instant fitfully in our eyes, presaging the day when they are to leap forth to their avenging task.

Having now touched upon the nature and offices of Conscience, we add one word of the *rank* it was intended to hold among our other powers and susceptibilities. Should it appear that that rank is the highest, we shall have reason to conclude that in the Divine Mind the Holiness to which conscience points us is also the attribute most sacred and inviolable.

Be it observed here that we speak not of the power which Conscience usually possesses, but of that which it was *intended* to possess, and *should* possess,—of its authority, and not its strength,—of its potential or normal prerogative, not of its actual ascendancy.

science, and we are either unobservant of the moral character of our act or we persuade ourselves that it is right. Like David, we condemn another for injustice much less flagrant than that which we ourselves commit. In respect to our own great sins, conscience may be dormant; but it is only until some Nathan, with a prophet's authority, shall bid it awake, and then it will show itself with all the majesty of a giant refreshed by sleep. Thus shall many a conscience, now torpid, awake one day!

In other cases, we transmute the apparent character of an act by *association*. The *end* is holy; holy, therefore, we think, must be the *means*. We do not consider that a worthy end claims that none but worthy means be used in its pursuit. We do not reflect that the means are so many acts, each to be tried by its own intrinsic character, rather than by its tendency to promote a certain result. How often do bigots and persecutors delude themselves in this way!

Again. Those that we love, obey, or admire commit the action. How easily is the lustre of their station, accomplishments, or virtues transferred to their vices, and made to gild them over with the appearance of innocence or goodness! We tolerate and practise them, not as *vices*, but as *virtues*.

Even in the most degenerate state of society men do not cease to honor virtue. They honor it then by their hypocrisy. The fine names they give to their crimes, the high motives by which they profess to be actuated, all proclaim how the wicked shrink from regarding themselves as wholly devoid of goodness. They honor virtue, again, by the *ideal* homage they render to it in conversation, in the theatre, in reading poetry and fiction. Tears will be shed over ideal excellence or imaginary suffering by those who have no heart for real distress, nor one feeling for the most ordinary duties and charities of life. Nor are they wholly feigned. There is a morbid sentimentality into which men fall, when nothing of actual virtue is left, and it shows how ineffaceable these moral

injustice and unkindness are perpetrated unconsciously! How unsafe for any one to lay to his soul the flattering unction that "all is well" in the kingdom and estate of his heart, because he is not distinctly conscious of doing wrong!

In the second place, it is not true that familiarity with vice leads us always first to endure, then pity, then embrace. It was not so with John Howard, nor with Elizabeth Fry. It shall not be so with any good man who goes among the vicious to serve and reclaim them. His holiness shall be proof against the contagion of their society. Nay, healing power and virtue shall go forth upon him as well as them. Should purity prompt us to keep away from the impure and guilty? So thought not Christ, though the Scribes and Pharisees did. So thought not God, when He sent his Son into the world, not to condemn it, but that the world through Him might be saved. Holiness prompts rather to intercourse with the wicked, if thereby they can be made holy. It would raise all to its own level, impress on all its own image. Whether contact with, and contemplation of, vice shall corrupt, depends, then, wholly on the motive and spirit by which we are actuated.

Nor is it true that when men, from contact with vice, do become vicious, they can always be said to *embrace* it, if by that we mean love it. Some men and some women do evil, all the while hating it, and all the while hating themselves for it, and anxiously desiring to save others from its pollution. It is so with some parents who resign themselves to sin, but who would save their children from the poison of their example. Alas, the self-delusions we practise on ourselves! For such solicitude in respect to our children and to others we often take praise to ourselves, when, in truth, it pronounces but the more loudly our condemnation.

Even when men embrace the vice, and practise it heartily and cordially, is it *as vice*? Rarely. Passion has concentrated the regards of the mind, perhaps has borrowed the aid of con-

stand more than is usually implied by that term. Vice may be seen and yet not be properly considered. It may be considered and yet be surveyed in the light of its accessories, rather than in that which is properly its own. As the young now grow up, how many actions, sanctioned by general custom or by the practice of those whom we love or honor, come to be allowed, and even performed, which are intrinsically wrong, and which will be seen at last to be deplorably evil! How little is done to draw the attention of the young to the true moral character of a large proportion of their acts!—how little to lead them even to raise the question, “Is this right that I am about to do?” “Do as others do;” “Do not provoke ridicule;” “Do not affect or expect to be wiser or better than your seniors,”—these, in spirit, if not in form, are too often the burden of our moral teaching, while the moral eye and the moral sensibilities are meantime vacant,—gazing carelessly abroad, and moved by no deep and appropriate sense of what we ought to do. It is with conscience as we have seen it is with the corporeal eye by nature,—it is *adjustable*, but not *adjusted*. It needs, more than the corporeal eye, assistance and direction from without, to secure that this adjustment shall be correct and the functions of the instrument be duly executed. Let parents, teachers, guardians withhold these, and the consequence must be that the rising generation will come insensibly to tolerate and even love much evil without ever having hated it at first, and, indeed, without ever having properly observed it. Nothing is more important for the young, and, indeed, for all, than that the jurisdiction of conscience should be enlarged; that actions which now pass without consideration should be weighed; that the moral eye and the moral heart should be always abroad, vigilant in observing and prompt in reporting the true quality of all the visitants within our moral and mental sphere.* How much

* Some natures are morbidly sensitive and scrupulous in regard to their actions. They are exceptional cases, of which we do not speak here.

punish thee, then consider that God is greater than thy heart, and knoweth all things."

These different phases of our moral sensibility seem to point distinctly to the pleasure or displeasure, more intense than we can think, with which God looks on moral actions, to the Holiness which urges Him to encourage only the good and to frown on the evil, and which employs these moral sentiments in our hearts as so many means through which we become, in respect to one another, executioners of his justice.

DEFECTIBILITY OF CONSCIENCE.

We should consider also the *Defectibility* of this emotional power in conscience. As the discerning power is *fallible*, so the emotional power is *defectible*. It may fail to *feel* the emotions which properly belong to the action or feeling; it may fail to be properly influenced by them. To approve the better and follow the worse is a familiar case, and it is a case in which the discerning and approving power may be faintly exerted, but without the necessary impulsive power. Conscience points out the right way, but does not constrain us with sufficient force to take that way. There are other cases in which we not only follow the worse, but seem to come by degrees to approve and love it. Pope has attempted a description:—

Vice is a monster of so frightful mien,
That to be hated, needs but to be seen;
But seen too oft, familiar with her face,
We first endure, then pity, then embrace.

As we propose to examine the defectibility of conscience, for the purpose of showing that it does not compromise the Holiness of God, but rather illustrates and exalts it, we will point out wherein, as it seems to us, the statement of Pope may be corrected.

In the first place, it is not true that in order to be hated vice or evil needs but to be seen, unless by seeing we under-

than making a donation to the poor; such donation, less than a generous act towards an enemy; and even such an act, less than extending full pardon to one who had greatly wronged us.

— And does not the possession of this sensibility, on our part, point to the existence of one corresponding, but infinitely higher, in God? Is not the author of such a moral sensibility likely to be angry with the wicked every day? Shall crime move our displeasure so intensely and leave Him unmoved?

Consider the *variations* in this moral emotion:—1. We look on the actions of those distant in time or place, or we read historical accounts of them, and feel, in some measure, approbation or disapprobation. This feeling, too, is not entirely passive. It prompts us to imitate or to avoid. It also inclines us, as we read, to call up the dead or the distant for trial, thus foreshadowing the great Assize.

2. We look at the actions of those who are near, and our approbation or disapprobation is at once more intense and of more active character. *Before* an action, it prompts us to interpose, in order to aid or obstruct it; *afterwards*, it urges us to reward or to punish it; and it thus contributes, most materially, to deal out retribution to actions as they transpire in this world, (a) directly, and (b) indirectly by leading us to uphold law and demand its righteous administration.

3. We survey *our own actions before and after* they are performed, and are visited by corresponding emotions. If we have done right, we not only applaud ourselves, we know that others applaud us, and in that applause we seem to hear a prelude to the “*Well done*” of Him who is God over all, and who is to be our righteous Judge at last.

If we have done evil, we not only condemn ourselves, we know that others condemn us, and are ready to be the instruments of our punishment. Hence we fear and tremble, and then the soul whispers to itself, “If thine own heart condemn thee, and if every heart like thine own condemns and would

with the growth of our powers and our responsibilities; in the other case deteriorating alike our character and our powers, but not lessening our responsibility.

2. This fallibility of conscience raises our minds from the imperfection of our own moral nature, which we feel and deplore, to the perfection of a Holiness which cannot err, thus adding to our reverence for God, and urging us to strive after assimilation to his perfect moral character.

3. It may lead us to consider that since morality has to our minds its *objective* as well as its *subjective* side, it may have the same to God. "If God were to command us to hate Himself, hatred to God would be our duty," was the language of Occam. Abhorrent as such language may be to our deepest convictions and sentiments, it has often been the language of philosophy, falsely so called.

Why should there not be an *immutable* or necessary morality, as well as a necessary and immutable Geometry? No modern writer has vindicated this fundamental truth so copiously and powerfully as Cudworth.

4. This imperfection of conscience also teaches us why the Creator's demands on men, on individuals, and on nations should be progressive, corresponding with the progress of light and of moral power.

We come now to—II. The *emotional power of conscience*. We say *conscience* merely for the sake of convenience. We care not though it be held to be a *secondary* principle in human nature, instead of being a primitive and irreducible one. We only contend that there is a power of discerning moral distinctions, and of being affected by the corresponding emotion. When we perceive an action, be it our own or another's, and judge it to be right, we feel approval and pleasure, just as when we discern an evil action we experience an emotion of displeasure; and this emotion is vivid and powerful in proportion as the moral quality is present in higher or lower degree. Thus, paying an honest debt excites less approbation

power by man,—a power so high in itself, so aspiring in its office and aims, so peculiar in its nature? Does it not point to the existence of a corresponding power in God? “He that teacheth man knowledge, shall He not know?”

(b) Observe, again, the *fallibility* of this power. Like Reason and Taste, Conscience, or the moral sense, always makes distinctions, but it does not always make them correctly. Like them, too, it can be educated upward to a much higher perfection, or downward to a lower fallibility; and this education is partly from without and partly self-derived. We cannot too carefully distinguish between *absolute* and *relative* virtue,—between *meaning* well and *doing* well. As we can do wrong with a good intention, so we can do good with an evil intention. The intention determines the moral character of the *agent*, but not that of the *action*. The resolving of all virtue into the subjective condition, into the motive or feeling in the mind, is dangerous, unfriendly to all improvement in character and to all steadiness in action. This was the radical vice of Rousseau’s philosophy. It has been adopted by those of much nobler aims, such as the late Dr. Thomas Brown, of Edinburgh, and it disfigures many of the admirable pictures of Mr. Dickens.

But what is to be inferred honorable to God, it may be asked, from this imperfection in man?

We answer, in the first place, let the objector prove that it is an *imperfection*. If man’s present state be one of trial and discipline, this fallibility of conscience is no imperfection, but a necessary prerequisite. Unerring and infallible moral judgments pertain to a state that is *fixed*, not to one that is *contingent*; and God displays his Holiness in endowing us with the capacity for arriving gradually at such judgments, and then charging us with the responsibility of using or abusing it. It proclaims to us the fearful alternative which we have before us,—a conscience *progressive* or *retrogressive*,—in the one case increasing our virtue and worth in exact proportion

(a) Observe the *universality* of this power. All of our race, except idiots and madmen, have it. It appears earlier in children than almost any other power, and appears under circumstances which clearly prove that there is a predisposition to the forming of *moral* notions. In all nations, as appears from their languages, and in all ages, these distinctions have been made, more or less imperfectly. Where the imperfection is greatest, there, as travellers among the most benighted heathen testify, is an aptitude—a proclivity for better and clearer conceptions—which only waits a fitting opportunity to manifest itself.

It applies, also, to all the *mental* states of such individuals. Of some, it pronounces that they have no moral quality; of others, that they are right or wrong, according to circumstances; of others, that they are invariably and eternally right or wrong. It pronounces not only on the *active* but also on the *passive* states of the soul, decides when they are criminal, and in what degree, and this teaches us to anticipate the doom of the unprofitable servant, if we follow his example.

It pronounces, also, of actions which terminate on ourselves and affect only our own happiness, declaring, for instance, that he who trifles with his own happiness is not a madman merely, but a criminal; that he deserves not only compassion and contempt as a fool, but indignant scorn as a faithless steward, who has impiously thrown away what has been confided to his care, and what was intended at once for his enjoyment and his improvement, as well as for the benefit of others. It extends its jurisdiction, too, *above* mankind. It feels that it could judge angels, archangels, God. Why are we arguing the question whether God be indeed holy? Do we not thereby assume that we are able to form conceptions of his character by some standard without Himself? And, if the Bible is true and divine, He recognizes both our ability and our right to do this. "Are not my ways equal? are not your ways unequal?" saith the Lord.

And what does this indicate,—the possession of such a

perceiving in many of them* a quality wholly different from their propriety or gracefulness, or even profitableness, which we call their *moral* quality. This quality is designated by the term right or wrong, good or bad, virtuous or vicious; and we express our sense of the *moral* relation in which the agent stands to the action by saying that he *ought* or he *ought not* to have done it. Such language we never apply to the conduct of an animal. That there is something more in such actions than their mere tendency to promote or obstruct our advantage, is obvious from the fact that we all conceive of actions which might be profitable and yet not right, or right and yet not profitable. We admit that, on the whole, if we include others as well as ourselves, and the life to come as well as the life present, actions which are right will be ultimately useful. But yet we can conceive it to have been otherwise. To the individual acting it often is otherwise in this world. The concurrence of the two properties in the same action proves nothing of the one being the cause of the other; and even if they do stand in that relation, it might be impossible for us to discriminate the effect from the cause.

Be it observed, too, that this concurrence or coincidence of utility and virtue in the same action is slowly discovered and reluctantly and doubtfully admitted by men. Take the lowest form of the truth, "*Honesty is the best policy*," and how prone mankind are to question it! For this life, how many exceptions are there to it! How often are men honest in spite of altogether distrusting the policy of being so! And were we assured that the most upright men we know were upright *only* because they acted on this maxim, should we still honor them, honor them above all others, adorn them with the lofty epithets of *pure*, *honorable*, or even *honest*? *Cunning*, *shrewd*, *sagacious* would, in such case, be our chosen terms of praise.

* An action, to be the proper object of this power, must be,—1. Voluntary.
2. Performed by an agent capable of reflecting. 3. Accordant or discordant in respect to some known relation.

subjected to the scrutiny of logical tests ; and who justly distinguish between *Religion* as a duty to be discharged or a sentiment to be felt, and *Theology* as a science to be investigated and established by proof.

We remark, further, that in speaking of the *moral constitution* of man, we shall endeavor to shun speculations merely theoretical. This part of our nature has given rise to much discussion among Psychologists and Ethical Philosophers ; and the analysis of it is still incomplete. But there are certain great facts and laws which are obvious to all, and in respect to which Epicurus and Zeno, Aristotle and Plato, Locke and Leibnitz, Paley and Butler, with their disciples, might agree, differ though they should as to the explanation of those facts. Occasionally and inadvertently we may use the language of that which we hold to be the true theory ; but the acceptance of that theory is no necessary condition to the reception of the arguments which we shall have occasion to urge. One assumption, and but one, we shall be obliged to make, and this is, that man has a *moral* nature, as distinguished from that which is intellectual, sensitive, æsthetical, etc. Without this we should have no basis for the particular argument we shall insist upon in this connection ; nor, as it seems to us, should we, but for possessing such a nature, be able to form any conception of the moral nature of God Himself,—of the Holiness which leads Him to promote the moral well-being of his creatures as distinguished from the Benevolence which urges Him to provide for their simple enjoyment.

Our *moral nature* presents two leading powers or functions :—
1. The power of *discerning* moral distinctions. 2. The power of *feeling* moral *emotions*. Each one of these reflects the *Holiness of God*.

I. The *discerning power*. There is, in the human mind, a notion of moral *right* and moral *wrong*. When we look at the voluntary actions of our fellow-men, we are conscious of

CHAPTER V.

THE SOUL WITNESSING TO THE HOLINESS OF GOD.

WE discuss this Divine Attribute here with the aid, mainly, of Psychology, and we shall confine our remarks, for the most part, to the *Moral Constitution* of man; premising,—

That we do not present our views here, or elsewhere in this work, as if they were exclusively or pre-eminently important, or as if the fate of Religion depended on their acceptance. We can explore but a small part of the great field of Evidence,—of that part we can present only specimens. Should any fallacies be perpetrated in our expositions, let them be charged to the advocate, not to the cause. It is the fate of many a client, with a good cause, to entrust the conduct of it to incompetent counsel; but it is no less the duty of enlightened and impartial judges to look beyond *his* mistakes to the true merits and facts of the case. Happy is it for Religion that its practical interests do not depend solely nor even mainly on the wisdom of men, but on the power of God! Through the medium of our instinctive and deep-seated feelings and convictions on the one hand, and of our experience on the other, it is provided that Religion, as a great Interest coming home to the business and bosoms of men, shall ever command at least a nominal homage. Our special object is to vindicate the *reasonableness* of religious faith to those who insist on surveying it through Reason; who demand scientific grounds for its great principles; who insist that it shall be

maux, where the cold freezes mercury, and among the Hottentots. The country of each is, in the estimation of each, a paradise, and there is contentment and enjoyment, though, according to the true standard, we can hardly say there is happiness.

3. The next law which we would mention is most significant of *Divine Benevolence*. It is the law that those sentiments and that state of mind which are most conducive to *permanent good, as well for the agent as for others*, are to a well-regulated mind also most pleasurable at the time. God seems to give us a *bounty* for consenting to be happy ourselves, and to act as instruments of happiness to those about us. All along the path that leads to our ultimate and greatest good He strews flowers and gives music, that we may thereby be induced to take it. For example, *Hope*, which is always needed, is always pleasant, always a *cordial* to the heart. *Fear*, which is needed occasionally, and for a brief space, is *painful*. The *benevolent affections* are more pleasant than the *selfish*, and yet more so when compared with the malevolent or defensive. *Mental pleasures* are more delightful than animal, because—1, they do not exclude *animal pleasures*; 2, they greatly heighten them. There is even more organic pleasure in eating and drinking, for those whose minds are pleasantly occupied, than for the man who, having neither knowledge nor thought, is but an animal. So of odors, so of sexual appetite, so yet more of the higher pleasures of the eye and ear.

enjoyed without endangering our welfare or the welfare of others.

So with the other sex. It would argue ill for the marriage union did not woman carry all through life her deep sense of affection and her power of casting over the husband, for whom she is ready to sacrifice everything, a corresponding halo of goodness and worth.

But I pass to another principle, which seems to be compounded in part from those already noticed, viz. :

2. The power which the whole mind has (corresponding with that possessed by each faculty) of bringing about a mutual adjustment between itself and the place in which it is permanently established. The fact is familiar to us that happiness is to be found everywhere,—in wealth and poverty, in rank and servitude, under polar skies and on equinoctial sands. The mind is, in one sense, its own place ; it can surround itself with materials of contentment—even of enjoyment—in any sphere. And this is not merely the result of the passive power in the mind,—the power of acquiescing in what *is*. Were that the only element, life would be too stationary. Improvement would be impossible, whether for the individual or for society. There is an active power which strives to effect the adjustment, in the first place, not by bending our wills, tastes, and habits, but by bending the wills and habits of others, and by mastering and subduing the powers of nature. Hence a struggle takes place, unless early training and habit have already superinduced a conformity in the mind. That struggle is the fruitful source of good to the individual and to the world. But when, at length, it is seen to be a struggle in vain, we come under the law that insurmountable impediments lessen or extinguish desire. We call upon our fortitude, our patience. We look for reasons to reconcile us to our lot. We become engaged and interested in what is practicable. And life becomes not only possible, but pleasurable everywhere,—in Lapland, in Middle Africa, among the Esqui-

proportion of our best blessings. And what is the nature of the affections? They see, in part, through the medium of the Imagination. They fasten early upon some object and invest it with attractions not properly its own, and hence the closest and most unreserved youthful friendships are formed. Hence marriage becomes not only possible, but the great want and hope of life. Hence parties who, did they see each other with cold, calculating, or scrutinizing eyes, would never venture each to intrust the other with their happiness, eagerly join hands in that holy alliance for better or for worse, which nothing but death ought to dissolve. These charms gradually disappear, perhaps, but they are replaced by others of a milder and more steadfast hue. We do not cease to love our wives or husbands because we discover that they are not absolutely perfect. We see in them the parents of our children,—the partners of our joys and sorrows,—objects of care and tenderness to us as we are of care and tenderness to them. We know that their welfare, and the welfare of those dear alike to both, depend on our union being perpetuated in peace and love; and thus we exchange for the gay illusions of our first love, the sober, salutary illusion of a permanent habitual affection. There is still illusion, but no deception. The object of our affection does not appear to us as to an unconcerned and critical spectator. We look with our heart as well as with our understanding. We look as we were intended to look. Objects of pure science are to be viewed with intellect alone, objects of taste through taste enlightened by reason, and objects of affection through affection sobered by the same faculty. Nor is the illusion such as to occasion actual deception. We know full well that our mother, sister, wife, though beautiful to us, may be positively plain, or even ugly, to a stranger. The illusion we experience is like that which overspreads us when we witness a dramatic representation,—the more pleasant that we know it to be, in one sense, the creation of our own minds, and that it can be

blocks, strings, and sticks, with a free range in pure air and open field.

In youth Imagination has a still higher office,—even that of setting before us the attractions and rewards of some active pursuit. In middle age it conceives new plans, aids in selecting the materials for their accomplishment, and carries us ever onwards beyond the present to something better in the coming time. In old age, if it have a Christian's faith, it gives one hand to painting with mellow radiance the rest that remaineth for God's people, and with the other it casts bright hues over the distant past, over boyhood and youth, over the companions, the sports, the parents, the humble, perhaps, but not unhonored or unlamented home of life's gayest, happiest hours. Beneficent arrangement! which makes the young say, "To-morrow shall be as to-day, and much more abundant,"—the middle-aged to whisper to themselves, "Boast not thyself of to-morrow,"—and the old, "The former days were better than these," rendering the first *laudatores temporis agendi*, the last, *laudatores temporis acti*; causing the one to be prophets of good both to themselves and to the world, the other to serve as monitors of evil to come, and historians of a good which is good no longer. There is in one sense illusion, but it is illusion compensating its own aberrations; to the young a constant stimulus and cordial, to the aged a remuneration for disappointments and sorrows.

Look, again, to the *uniting affections*,—those which urge us to form the *domestic tie* and the tie that *binds together friends*. How they adjust themselves, without forecast or arrangement of ours, to the various spheres in which they are called to act! In early youth, a confidential friend, not of our own immediate family, is a great blessing,—almost a necessity. When we reach maturity of life, a union in marriage between those of different sexes is necessary, in order to lay the foundation of that domestic society which is the great source, support, and ornament of all other societies,—fruitful parent of a large

The reason is plain. Memories so closely linked with feeling and with bright fancies are imperishable, and hence the fact, so familiar to us all, that while recent events are soon forgotten, those that belong to our early years are the last to fade away. And is not the provision a most benignant one?—benignant as making the old more happy,—as contributing, too, to improve them by leading them to that which was the most unsophisticated and uncorrupted period of their life,—as making them also more pleasant and more useful companions for the young? One other use we cannot but advert to as entitled to our special notice. The old thus become the faithful *chroniclers of the unwritten past*. Did events appear obscure in proportion to their remoteness, the old would not be such valuable links between the past and the future as they now are, preserving and transmitting faithfully, as their last act, materials which may be invaluable as evidence in law or in history. They hand it over, too, to those who will live longest, who hear it with the greatest interest, and through whom it will be most sure to pass on again to children's children. In this way each link in the chain of traditional evidence of unwritten history is nearly equal to the duration of three generations.

Or, turn to *Imagination*,—in childhood providing a mental gymnasium,—supplying to the soul the same unfailing spring of activity that nervous sensibility supplies to the body. The more various, and, we had almost said, the more extravagant its earliest creations, the better for the soul's development, just as creeping and walking and running are better for the child than being carried in arms or drawn in a carriage. Hence the folly of parents and nurses who get expensive toys, thus replacing the spontaneous fabrications of a child's fancy, and the consequently ever-varying activities of his system, by too much aid or guidance. The child, even more than the man, was intended to be the artificer of his own happiness, and the livelong day he will amuse himself if we give him but a few

lates fast in proportion as he is industrious, intelligent, forecasting, and upright; and to cultivate every one of these qualities an active sense of duty is the surest incentive. And that which he accumulates the good man is less likely than others to waste in self-indulgence or lose through improvidence,—because (1) he is frugal from principle; because (2), as a steward, he feels bound to render his property reproductive, so that his own capital and that of society shall be enlarged; and because (3) he finds in the possession and wise and generous use of property one of the best means of serving God and man.

Another reason why the supremacy of the moral sentiments promotes the maximum production of wealth is, that it enables men to *co-operate* as capitalists and laborers with entire confidence in each other, and in a spirit of mutual forbearance and assistance. It secures, also, the substitution of productive for unproductive investments, and of cheap and refined amusements for those which are at once more coarse and more expensive. It prevents the vices which are such fruitful sources of poverty, and places under the ban employments which, by ministering to those vices, sap the foundations of a nation's material prosperity. It would secure, also, that in the *distribution* of property employers and employed would cling alike to the golden rules of justice and reciprocity, and thus secure that their joint earnings shall contribute to the greatest happiness of all. In one word, were all men conscientious, truly and intelligently so, the production of wealth, and its resulting benefits, would at once be increased tenfold. While, on the other hand, were all destitute of moral principle, individual effort would be reduced to its minimum, and associated effort become all but impossible.

3. A third end to which the power of man's soul may be applied is the *cultivation of the intellect*, both by improving its powers and by enlarging the bounds of its knowledge. Other

things being equal, this end will be compassed most certainly by those who prefer duty before fame, pleasure, or wealth. For, 1, they are the persons who are impelled by the most effective motives, such as a love of truth for its own sake, and a sense of responsibility for the use of time, talent, and opportunity. 2. They have the best means and appliances for the discovery of truth and the improvement of all their mental powers, since they are most docile and candid. 3. They are best secured against great errors, since they are neither too confident of their own sagacity nor too distrustful of it, neither too much bent on self-aggrandizement, nor too much debased by sensual desire, nor too much addicted to malevolent or misanthropic feelings. 4. They are, also, best prepared to encounter difficulties in searching after truth, since they are patient and industrious, and since, also, their moral worth insures to them the largest measure of assistance from those best qualified to afford it.

4. The same principle holds true of *aesthetic culture*,—that which aims at the development and agreeable exercise of taste and Imagination,—whether we aspire to be masters in the liberal arts, as painters, sculptors, poets, wits; or whether it be simply our ambition to appreciate and enjoy the beauties of Nature and Art; in either case a delicate, moral sense, and a conscience sovereign over all the mandates of passion and prejudice and sordid ambition, is almost indispensable to the highest culture. It is so, because without it we shall want the high inspiration and the delicate perception which come only from the love of goodness. We shall want elevation of taste and sympathy. We shall want large and loving hearts. We shall want a relish for true simplicity. We shall want dominion over those passions which pervert the taste and obscure the judgment. We shall want the paramount love for truth and nature, which is the only safe guide in questions of taste; and as *creators* in the world of art, we shall never burn

with that fire of great emotions and lofty moral aspirations which belongs pre-eminently to the pure in heart, and which exert, when duly expressed, such dominion over the souls of men. "The good man alone can be a true orator," was a favorite saying of the ancients. It is a truth which applies equally to all the arts that speak to the taste, imagination, or better passions of our nature, and it applies, also, to those who would have a true and perfect taste for beauty, and derive from it the highest and most exquisite pleasure.

BOOK III.

THE SOUL A WITNESS TO ITS OWN DESTINY.

CHAPTER I.

IMMORTALITY.

IN the last Book we dwelt on the Psychological argument, so far as it went, to illustrate the Being and character of God. We insisted, particularly, on the *moral* part of our constitution, because that points most distinctly to a corresponding though infinitely more perfect moral character in God; and we dwelt the longer upon the moral attributes of the Deity, because we desired to vindicate Natural Theology from the reproach often cast upon it of being mute respecting them. As taught in too many printed books, it is so; but as set forth in the great Book of Man's Nature, it is everywhere rich in such instructions; and we have had occasion to intimate heretofore* that even physical laws are so constituted as to show that their Author must be on the side of right.

Thus far we have used the Nature of Man mainly in order to study God. We propose now to employ it in exploring the spiritual condition and prospects of Man himself. We might reason from the ascertained character of God to what would be his probable purpose in respect to the destiny of his intelligent and moral creatures; but such inferences are often hazardous, because (1) they assume, on our part, more knowledge than we possess, and are thus likely to land us in error.

* Part i. chap. iii.; Part ii. Book i.

neous as well as rash conclusions ; and because (2) any fallacy vitiating our reasoning is apt to shake our faith in the whole superstructure of religious doctrine.

In treating such a subject, it is important, moreover, to multiply independent sources of proof, so that, though one should seem to fail, we may still have others in reserve.

It is important to remember, too, that our object, in this part of the discussion, is not so much to establish by proof the leading doctrines of Religion, as to show that man is so constituted that faith in them is natural, and almost necessary. When announced in the Bible, or elsewhere, they speak no strange language, but one the rudiments of which have been partly learned in that school of mental development through which every human being is called to pass during the earlier years of his mortal pilgrimage.

It is important, also, neither to underrate nor overrate the natural as distinguished from the supernatural Revelation of God. To underrate that Revelation which He makes respecting our state and prospects, through his works, and especially through man's constitution, is to disqualify ourselves from comprehending fully or appreciating properly the disclosures made in the Bible. Such a knowledge of morality and Natural Religion as we get from a candid and thoughtful consideration of our human nature, is a key to a clearer and more enlarged comprehension of many passages in the Old and New Testaments ; while, on the other hand, a knowledge of the sublime truths taught in the Christian Scriptures must enable us to discern a meaning and significance in many a natural law, which might otherwise seem destitute of all religious interest. It is as if two letters had been written to us by a friend, the one in common characters, the other in cipher or in phonographic characters ; or the one in a clear, bold, round hand, the other in an all but illegible scrawl. We should not wholly neglect the latter because the former was so much more legible. Each would assist us in understanding the

other, or at least in extending and perfecting our notions of Him from whom both proceeded.

There are four *problems* which touch man's religious condition and prospects, which may be indicated by four words,—*Immortality, Retribution, Discipline, Redemption.*

THE PROBLEM OF IMMORTALITY.

We propose to take up, first, the problem of *man's Future beyond this life*, respecting which there are two distinct questions:—1st. Is there a future after death, or does the dissolution of this body involve the extinction of the mental powers? 2d. If there be such a future, is it one of conscious personality, or one in which we exist in a state of unconsciousness or semi-consciousness, or one in which we return back to the Universal Spirit? In discussing these questions, we make as few assumptions as possible. We assume no God, no immateriality of the soul; though we might justly claim both. If it be chance that has brought us into this world, chance also, as Addison remarks, may cast us upon another. And he who has followed us in our physiological arguments will not doubt that we hold to the existence of an immaterial principle in man, indicated even by his bodily structure and functions. But the future existence of man depends not on the constitution of the soul: it depends simply on the will of God. We appeal, then, to

The all but *universal belief that death, instead of being the end of man, ushers him into another sphere of conscious existence.* We acknowledge that by some philosophers this belief has been disowned; but it would be difficult to show that they were not actuated by a desire to keep aloof from the vulgar in their opinions and actions, rather than by a sincere and manly regard for the truth. We acknowledge, again, that this belief has been sadly caricatured and disfigured in the mythologies of most pagan nations; but these disfigurements

are the growth of later, less simple, and less earnest times, while, at the beginning, that faith was purer and more correct. We acknowledge, further, that the reasons for this belief often assigned among the ancients were insufficient. All this only renders the fact in question, if it be a fact, the more striking and conclusive.

That this belief in a Future Life has been ever and everywhere all but universal, is clear, when we consider,—1st, that at this moment it is very doubtful whether any tribe or nation, however degraded, is entirely destitute of it; and degraded savages, moreover, afford no proper criterion of what is the average apprehension of mankind. And 2d. That Warburton, whose interest it was to discover unbelievers, could find none, except a few philosophers, and one people, the Jews, who on this subject were kept in darkness (according to him) by supernatural means.

The fact of this belief (with such exceptions only as go to strengthen its authority) being established, we must refer it to one of *four causes*:—(a) To an instinctive or intuitive recognition of a great and most important truth. There are primary and intuitive beliefs (such as the belief in our own existence, in the existence of an outward world, causation, etc.), which we may as well accept as natural and necessary, since they seem to be actually required at every turn in life; and since, moreover, attempts to give them a valid *a priori* demonstration have not as yet proved successful; and, when unsuccessful, the reaction against the faith, thus unwisely and inadequately upheld, is apt to be proportionately violent.

If it be an original and instinctive belief, it presupposes the existence of its object, as is the case with other primary beliefs and instincts.

(b) Or, in the next place, we may refer this universal faith in an after-life to Tradition, which must have been Divine or Human. If Divine, the question is settled at once upon the highest possible authority. If human, the question arises, how

could such a tradition spring up, unless it represented some great and at least partially-recognized truth? or, having risen, how could it live on from age to age (and especially in the midst of corruptions and absurdities so revolting as those which deformed Pagan Mythologies), unless it appealed to sentiments in the human soul alike powerful and indestructible? Traditions that survive and travel down through many generations, must derive their power from the precision with which they correspond to the natural sentiments of the human mind.

(c) The same reasons apply to the hypothesis that this belief originated with Philosophers, Priests, and Legislators, who would keep the vulgar in order by keeping them in awe. The all-sufficient answer to this theory is, that those who would sway mankind do not attempt to create new principles and sentiments in the souls of men. Legislators, however bent on moulding a nation's mind to their own purposes, have undertaken nothing more than to give undue development, monstrous disproportion to some one pre-existent principle or faculty. They take man as they find him, and the fact that they deem it necessary to employ this belief and find it a most potent and all-controlling one, only demonstrates how deep a hold it has on our primary convictions.

(d) And so with Literature. Some persons profess to look on the idea of a future life as part of the machinery created by the Poet and the Dramatist. It is, indeed, machinery, but not of the Poet's making. He found it made to his hands; and the fact that he cannot dispense with it, that to strike out from the creations of his genius faith in Immortality, would be to strike out much of their essential odor and flavor,—one of the grandest elements of their power,—does not this prove that this faith must have place among or near the original sentiments of the human heart? And the fact, too, that when in his noblest moods he draws most largely on this sentiment, that these are the utterances of the soul when it is

most moved, or most exalted, or most enlightened,—does not this show that this belief is most congenial to the soul in its best estate? "Common Sense," says Guizot, "is the genius of humanity." Taken in its highest import, it represents the conceptions and conclusions which masses of men reach, and reach, sometimes, with such mysterious and marvellous rapidity and accuracy. Through sympathy in a common subject, stimulating each individual mind and heart and rousing the imagination, affections, and the whole moral nature; and through these constraining the intellectual powers to a preternatural activity, the collective mind here of a crowded assembly, there of a large popular mass; now in a city all engrossed with one common and absorbing thought, there in a nation at some eventful crisis of its history (a battle or a revolution); under such circumstances collective mind leaps to truths and convictions with almost intuition quickness. It is the poet's or orator's province to catch these gleams that flash from the heart of our common humanity and give them appropriate expression. Or, where that heart has not been actually thus taxed, it is the poet's province to conceive and create, through his wonder-working powers, the crisis for himself, and then cause it to speak in fitting language to those who hear or read.

We see, then, how men are projected, as it were, on this faith in an after-life; we see how they are predisposed to welcome Revelations that have respect to it, and how needful it was that a special Revelation should come to rectify false notions too readily imbibed under the influence of such predisposing influences. In proportion as a sentiment is active and deep seated, it is liable to be perverted in times of ignorance and corruption.

We are inquiring what indications of a future life can be found in our own mixed nature. We have not undertaken to decide whether the prevailing belief in it, which has obtained even in nations who have no written Revelation, be or be not

subjective in its origin; whether it be the result of positive Divine teaching from without, or of intuitions and instincts implanted by the Creator within. On either hypothesis, the readiness and eagerness with which the belief is seized upon, and the tenacity with which it is maintained, in spite of all perversions and corruptions, prove that it is a doctrine most congenial to man's nature.

We propose now to point to some of the *principles* in man's constitution which seem to indicate distinctly a "Life beyond life," and which may have occasioned the prevailing expectations of it just noticed. If they are not its source, they must, at least, have contributed greatly to uphold, preserve, and strengthen it. What are they?

At present we notice only those which may be regarded as independent of conscience. The moral principles in our nature, which foreshadow the life to come, will have their place more appropriately when we come to discuss the Tributaries which that life will bring with it.

We notice *seven* elementary principles, or laws of belief, which point towards this after-life. Their value, in this connection, will be more apparent if we compare the primary conceptions and intuitions which they supply with the results of experience and of scientific investigation.

1. The first of these principles is an *instinctive belief in the constancy and uniformity of Nature*, which comprehends an intuitive assurance that objects now existing will continue to exist, and that their essential properties will remain unchanged. We ask attention to this assurance, as bearing on the question now before us. That being called myself (self-conscious, free, intelligent, active) exists; an irrepressible consciousness teaches that much, and an irrepressible primary belief teaches, further, that our existing now is a guarantee that we shall continue to exist to-morrow, next week, next year, and forever, unless it can be demonstrated that there is some cause able to effect our destruction, and likely to be employed for

that purpose. Is Death such a cause? Is it known, or can it be proved, that its action involves more than the *disappearance* of those powers which we call ourselves? But the disappearance of an object by no means proves its annihilation. It would not prove this even of a visible and compound material substance. For instance, the water in the tumbler before me disappears as vapor, but it still exists; exists, too, as water, altered, indeed, in form, but ready, through a change of temperature, to return back at any moment to its liquid state.

That, however, which we call a person is never visible, nor is it a compound substance. It only *manifests* its power and existence through visible and tangible organs. These are no essential part of that which makes up the self-conscious, self-determining, and forecasting power that we call soul or mind. They are merely its instruments, and if they no longer make it known to us, is it not more rational to conclude that the fault is in the organ, or medium, rather than in the active percipient power? How is it in sleep? how in a swoon? In the former, the voluntary or animal powers no longer act. In the latter, all visible action, whether voluntary or involuntary, is suspended. Therefore the soul no longer manifests itself. Yet it still exists, as we know. If, then, it can survive a suspension of these powers, continued in some cases for a very long period, why may it not survive the final cessation of their activity?

If it should be objected that this argument applies to the vital power as well as to the sentient personal power, we admit it. Who knows but the vital principle, called life, may outlast the organism it has built up and animated? Its extinction, however, would not necessarily involve that of the soul, for we know that they can exist apart. At least life (as in vegetables) can exist apart from and independent of mind, and why should not mind, the better and nobler power, assert its independence also by subsisting apart from life?

2. Consider, also, the deep conviction we all have that that which we call ourselves, our personal being, is a simple substance, absolutely one and indivisible. There is unity of person with a plurality of faculties and organs. But if this be so, its destruction at death is most improbable, since death involves the destruction or annihilation of nothing even in the body. It merely involves the dissolution or decomposition of the organs; the matter composing those organs remains; not a particle of it has perished. In the material world annihilation is unknown. If the soul, then, were material, and yet simple, all analogy would negative the idea of its being destroyed, any more than other simple bodies pertaining to our structure. If it be immaterial, there is still less ground for such apprehension. Has annihilation been excluded from the lower world to reign and riot in the higher? Consider our deep conviction that, amid all the changes, material, organic, intellectual, and moral, which we undergo, from our birth to our death, our personal identity remains. We are the same persons that uttered helpless cries in infancy, that were then little more than a span long, that knew nothing, loved nothing, regarded nothing. Through what vast and all but incredible changes have we since passed, in respect to the matter of which our organs are composed; the state of those organs as to health, strength, comeliness, the amount of our intellectual capacity, and our moral resources! Who, but for the irrepressible voice of consciousness, would not say that we must have been, successively, many separate independent beings; and if our personality has been able to withstand changes so many and so great, is it not likely that it may survive others probably no greater? Who can suppose that a Newton, in passing through the grave and gate of death to another life (if there be such a life), experiences a change equal to the sum of all those through which he had passed already on his way from his cradle to his tomb!

And there are other analogous facts. Our consciousness

tells us that when embryos in the womb we were essentially the same persons we are now. But then most of our personal organs were in abeyance, like those of the butterfly. The functions that now belong to the lungs, heart, and stomach were then performed by the umbilical cord and the placenta. Ushered into life, we used those no longer, but at once employed the organs adapted to our present state of existence. Why, in passing away from this scene of existence, should not a similar substitution of organs take place, those now used being laid aside for a new group better fitted for the higher sphere on which we are to enter? How much is such an anticipation encouraged by all that we see in the animal world, as, for instance, the crawling caterpillar transformed into the winged butterfly! The ancients regarded this transformation as a significant type of a better resurrection which awaits our humanity; and in the beautiful fable of Psyche, a word which stands both for butterfly and for soul, they embodied this deep-seated opinion.

We appeal to the preceding considerations for a twofold purpose,—1st, to rebut any supposed presumption in favor of the extinction of our whole being at death, which can be derived from the violent character and apparently wasting effects of that event; and 2dly, to afford a strong affirmative presumption in favor of our conscious personal existence after that event. We add three or four more.

3. *An instinctive feeling of the supremacy and sovereignty of mind in respect to our vital functions and organs.* Those on which the maintenance of life depends are wisely placed in a good degree beyond our control. Yet how much can the soul do to modify even their action, quickening or retarding the circulation through violent emotions, and sometimes through deliberate purpose, promoting or obstructing digestion, according as we are in happy or wretched moods of mind! Even in sleep we can retain a species of mastery over our powers; for, on falling asleep, let us resolve that we will

awake at a given hour, and when that hour comes the decree is executed, even by organs that were just now steeped in seeming forgetfulness.

With respect to the voluntary powers, what control may not a vigorous, resolute will exert over even their most violent impulses! . We see it in a child, restraining itself when urged by abounding nervous energy to make a noise or to run or jump; in an old person, resisting peevishness. And in sickness, in old age, at the approach of death, if there is imbecility, it is not so much the will, the spiritual power, that fails, but its material instrument. Often, however, we see, in the last hours of men, and especially of those who have lived a life of religious faith and hope, that even amidst the decay of the outward man "the inward man is renewed day by day."

Still more striking is the fact, that men, with all their love of life, set so lightly by it that they perpetually sacrifice it for an idea, and sometimes deliberately and proudly cast it away for a principle, or, as some will call it, for a mere abstraction, as for country, honor, religion,—an offering most absurd, if that which we sacrifice is our all of life; but most intelligible and honorable if it be but the porch to a higher life, where principles are to be everything and outward estate as the dust in the balance. "Is not your life more than meat?" said Christ. "If in this life only we have hope," said one who had been taught of Christ, "we are of all men most miserable."

4. Observe, also, the *radical difference in the law of development which governs mind from that which governs the material organism.* To the development of the latter, an early limit is fixed, and then forthwith comes decline. The recruiting and wasting functions are never exactly in *equilibrio*; so that decay and corporeal dissolution, as well as growth, are provided for in the very structure of the frame. But, in the structure and laws of mind, a continued and ever-progressive existence seems to be as clearly provided for. Only the passions, imagination, and such active powers as pertain to our

present wants, ripen before the age of fifty. Those which belong to a higher life, of reason, wisdom, love, resignation, beneficence,—we never see them in their highest perfection before a time when the bodily powers are decaying. Dramatists, Musical Composers, etc. ripen early; Statesmen, Sages, Judges, Philanthropists, later. When in this life does mind ever attain to its perfection, so that it craves no more, can accomplish no more? When to knowledge does the all-grasping and questioning intellect say, It is enough? when the heart to love? when the soul to active usefulness? when to any spiritual or higher good?

If it be objected that this capacity for continued advance is not usually manifested, the answer is that the fault is in the will, which surrenders itself to indolence and inertia, or to baser tastes and propensities.

We may ask, at this point, whether we do not see, in the constitution of the human mind, a pledge that it shall survive the great event called death? In many cases death itself must be a dark and horrible enigma, without the hope of such survival. Look at the little infant, just born to die; at the old saint, warring through life with evil without and evil within, self-cultivated, beneficent, full of love to God and man, going down to his grave as a shock of corn fully ripe,—ripe! for what? Annihilation, extinction of being? to mingle in undistinguishable corruption with the clods that press upon his bosom?

In maintaining this argument, we proceed, it must be remembered, upon strictly inductive principles. We point to certain facts in human nature, and ask that they be explained on any other supposition than that man is to survive the great event called death. If, without this supposition, such facts cannot receive a full and satisfactory explanation, then, for the present, at least, are we bound to assume and act upon a future Life as an established fact. We are to proceed, as the Naturalist does, upon the principle that nothing exists in vain,

and that when an organ or unused function is discovered, we may take it for granted that the time is coming when that function will be required and that end attained. When the Naturalist meets an animal with fins and gills, he does not hesitate to affirm that it must be intended to breathe and move under water. So when we discover the wings of the bird, or the feet and limbs of the quadruped, we at once infer the sphere for which it is intended; and so also the rudimentary wings in the caterpillar. Is it not right to make a corresponding inference when we mark the desire and capacity in man for illimitable and never-ending progress; when we observe how he regards his body, both as a slave and as an incumbrance; how he feels that, since his identity has already survived many and great changes, it may survive others and perhaps greater still; and how he clings instinctively to the feeling that his personality is one and indivisible, and that in existing now it gives every pledge of its continuing to exist hereafter? Man is well and wisely made, if made for Immortality. If otherwise, then we should not see here what we see everywhere else in Nature,—mutual adjustment between beings and the places they occupy.

5. We refer, further, to what takes place in some of the *abnormal states of the mind*, such as dreaming, reverie, and ecstasy. In dreaming, our voluntary corporeal organs are at rest, and their nervous sensibility greatly reduced. The voluntary powers of the mind are also suspended, and we surrender the whole nature to spontaneous processes. What ensues? Consciousness tells us that we seem emancipated from every mortal clog, from the restraints of space and time, and from all material incumbrances. We dream of being dead, and yet know at the same time that we are alive. Is not this a glimpse into the disembodied state?—an obscure prophecy coming, like the prophecies of old, in dreams and visions of the night, when deep sleep falleth on man, and proclaiming what is to be hereafter our scene of action and of contemplation? We do not insist on this; we only give what seems a

not unlikely view. To us it appears but reasonable that part of man's life being passed in the body, part of it should also be passed, as it were, without it, that thus he may be the better trained for an organism more ethereal and refined than that which he now employs.

6. Consider, again, our strong persuasion, partly, perhaps, instinctive, partly the fruit of experience, that *faith in an after-life is essential to man's true welfare*, even as it respects the life that now is. Both reason and experience strengthen this belief. How can we make man thoughtful, laborious, self-sacrificing if he has no expectations that reach beyond death? "Let us eat and drink, for to-morrow we die;" "Live while you live;" "A short life and a merry one." This, the language of licentious passion, is the natural language of a heart shorn of its religious hopes. With those hopes it feels the value of its higher faculties, and the wisdom of using them. We can see even the reasonableness of sacrificing everything rather than grovel with the beasts that perish, and from the depths of the soul's best convictions and yearnings comes a cry like that of Jesus, "What is a man profited, though he gain the whole world and lose his own soul?" On the other hand, let a man be bent on living a sordid or a sensual life, and he wants no remembrancers of a future beyond the grave.

7. Consider, again, our *instinctive preference of the ideal over the actual*. Animals are content with what they have. Man is continually flying from what he has to what he knows not of; he "never is, but always to be, blest." Animals move on, satisfied and submissive, along the level which has been allotted to them. Man is ever struggling to escape from the sphere,—to rise above the level in which he finds himself. Nothing will content him but such faith, on the one hand, as inspires him with the feeling that he is but a pilgrim on earth, who ought not, therefore, to be too anxious about the accommodations of his journey; or such debasement, on the other, as involves the abdication of the higher powers of his

soul, and reconciles him to employ all his mental resources in ministering to his bodily wants. Then, when his only question is, "What shall I eat, what shall I drink, and wherewithal shall I be clothed?" it is but meet that he should feel and act like the animal that he has become, and therefore have no yearning for a better state. But, in others, imagination will conceive, desire court, and active energy seek to realize something better and nobler than we have. It is so both with our outward and our inward estate. Who, except through his trust in God and his expectations from an hereafter, was ever perfectly content with the wealth, the fame, the power he has, or with the knowledge, the mental power, the love from others, the beneficent usefulness he calls his own? Use and habit can do much, we admit, to induce acquiescence and lead us to hesitate before we take another's place and character rather than our own. But this does not prevent our conceiving one more perfect, nor of making it the object of desire.

Are we told that this principle has an earthly use sufficient to account for it in the stimulus it supplies to sustained efforts after larger and better things than we now have? This, we admit, is a useful end, and one compassed, in part, through this principle. But were it the great or only one, we should expect to find the sentiment most active and influential in the earlier years of our life. Instincts are always most awake and urgent when they are most needed. But how is it with this disposition to replace the actual by the ideal? Is it the young, or those in the full vigor of their earlier manhood, that we find mourning over the emptiness of all that they have, and all, perhaps, that this world can give? Is it from them that we hear again, as from a fresh experience or a fresh intuition, the lamentation of Solomon, "Vanity of vanities, all is vanity"? By no means. The young are apt to be satisfied with life as it is. It is in later years, when instructed by a larger experience, and among those who are the most thoughtful and large-minded, that we meet the deepest sense of the insuffi-

ciency of all things earthly and the liveliest yearning for a better inheritance.

Take two forms of this phenomenon. (a) The desire of knowledge, when genuine, not a mere love of novelty, or idle curiosity, but a sincere love for truth in its great principles and in its unity. It does but grow by what it feeds on. Look at Newton at the close of life. How mysterious, if he is not to retain his mental power and his self-conscious personality beyond this narrow span! How intelligible and natural if he is!

(b) The sentiment that prompts us to substitute, for our brief term of life on earth, a vast ideal period running both backward and forward. Through history and through personal incorporation with natural and artificial societies, we seem to become contemporaries with those who lived long before us. So through other societies and through deeds that will win an enduring name, or exert an enduring power over men's minds and actions hereafter. We hope to live in power when we are no more seen in person. This intense longing for posthumous fame and posthumous power, this dread that when gone we shall be forgotten, or, though remembered, shall have but a name to live,—how inexplicable if this life be our all!—how natural if we are to exist forever! And it is only when such a future is recognized and remembered that this sentiment is useful even for our present life. Coupled with a proper sense of future responsibility, it leads us to do good to men while we honor God, to think of earth and its welfare while we strive for heaven. But if disconnected from such a feeling, it is often one of the most pernicious sentiments of man's nature, and has filled the world with ruthless votaries of ambition.

Again, both body and mind work during life, and leave visible monuments behind them. But the matter of the body survives, the decay of its organs helping to keep up the equilibrium of the material system of the universe, and subserving

other useful purposes. And is the spirit extinct,—the less outlasting the greater, the nobler perishing utterly when the meaner triumphantly outrides the last great earthly shock?

Ask we of the *body* and *its future*?

Our nature prophesies of it, too,—

(a) Through an instinctive regard for the remains of the human dead.

(b) Through the prevailing belief in apparitions of the departed.

(c) Through the probability that a material, external world, a new Heavens and a new Earth, will survive the last great conflagration, and be the appropriate dwelling-place of a risen and regenerated body.

CHAPTER II.

RETRIBUTION IN THE AFTER-LIFE.

IN discussing this subject, we shall be led, of course, to dwell on the *moral constitution of man*, and the evidence we shall adduce bears as well in favor of Immortality as of the truth we now insist upon. Let us repeat, too, that we appeal here to nothing but the principles and laws of man's complex nature.

There are three questions:—*First.* In the life to come, wherein, as we have said, we are to retain our identity and our personal consciousness, shall we experience retribution for the deeds of this life?

Second. Will the retribution experienced be moral retribution, dispensed according to the moral character of our actions?

Third. Will it be final and unending?

First. Will there be retribution? This involves a law, a knowledge of the law, and of the consequences to accrue in case of obedience or disobedience, and also such a degree of personal liberty as enables us to conform our conduct to the course required. Our intuitive convictions teach that there is law, that as all natural events succeed each other in fixed order, so to all our actions are annexed specific consequences. These consequences can be foreknown, and though they may, in particular cases, be suspended or even averted, yet, as a general rule, both our consciousness and our experience proclaim that, a given action being performed, a definite result will follow to the agent, and perhaps to others. Our faith in this case is but a modification or special form of that which we instinctively have in the constancy of nature, and in the rela-

tion of cause and effect. To a past act or actions, our present condition and character stand in the relation of effect; to those to come, in the relation of partial or entire cause. And so the sum or aggregate of those actions, which have gone to make up our present character, are represented by that character as their exponent, while the latter again foreshadows our impending future. These are the coming events that cast their shadows before. Ask what a man will be in character five years hence, and his present and past will generally enable us to answer the question. "The boy is father of the man," and the mortal terrestrial man a harbinger of the man immortal. This connection between successive stages of our existence can be broken by nothing but a strenuous effort of our wills, aided by a higher power. That achievement effected, the new purpose and new character induced become a new cause, which is a pledge of a new and corresponding future.

But suppose death to intervene before any such moral revolution has taken place, what are we to anticipate? The individual's personal identity remains intact. So, too, does his accumulated stock of habits, affections, and tastes; and are not these to draw after them their appropriate consequences? Does merely passing the narrow threshold that divides this world from the next involve the suspension or abrogation of one of the fundamental laws of his being?—laws which he is compelled to recognize by his strongest convictions? Up to this point he has known no other law. Had he remained on earth, it would have still reigned over him; and can a transition such as we refer to set it aside and place him under a dispensation wanting in the first principle of a continuous identity?

All our experience of the opposite effects of prudence and imprudence, for example, leads us to recognize:—first, that there is a government established over the world; and second, that since this government does not complete its dispensation

of rewards and punishments in this life, much is to be reserved for another.

Second. *Is the retribution to be expected in a future life a moral one*,—one that visits the good with happiness and the wicked with misery? We shall find an answer, so far as Human Nature can give one, in—

1. Our deep conviction that moral character and outward estate *should* correspond, that the holy should be happy and the unholy miserable. Hence comes our reverence for him who will do justice to others at any expense; our desire to reward where there is great merit and to punish where there is great demerit; our impatience when the proud prosper and the lowly are cast down; our sense of the close connection which really subsists between virtue and felicity, vice and wretchedness, evinced by our applying the same words to denote moral and natural good or evil. In fictitious Literature we demand the connection most sternly, because there the Poet or Artist is supposed to have his machinery at command, and to be able to dispense happiness and misery at pleasure. Hence, if he does not reward merit, after subjecting it to trial, nothing can reconcile us to his course but distinct reference to a future retribution, where the innocent sufferer shall be redressed and the guilty visited with displeasure. When this reference is made most clearly, we cannot endure that, even on earth, the wicked should escape entirely; and hence we should have been utterly outraged had Shakspeare's Iago survived the catastrophe which he had produced and been permitted to enjoy in peace the prize he aimed at.

2. And what the mind thus demands in life is supplied in part. Everything in the history and conduct of men evinces their conviction not only that sin and suffering, goodness and happiness, ought to be united, but that, as a general thing, they *are* united. Hence the proverbs (those condensed results of a nation's collective experience) which are found in every land, proclaiming that virtue is the way to happiness, honesty the

best policy, and the way of transgressors hard. Hence Legislation, which aims chiefly to find out what is useful rather than that which is right, denouncing, because injurious, the same acts which the moralist denounces as wrong. Hence History, if conceived with a moral eye, by one who esteems himself a judge, arbitrating between events and actors, and rendering true verdict according to evidence, without favor or fear; who arraigns the guilty and successful great only the more sternly, because they are successful and great; who feels his obligation to chastise the memories of those who forgot that their elevation bestowed no immunity, but imposed a fearfully augmented responsibility. Hence the one strain in which all such history is written,—*i.e.* that righteousness alone exalteth nations, while sin is the curse of any people. And hence, finally, our experience, when applied to smaller masses of men. All unite in teaching that holiness and happiness, sin and misery, are affianced by the will of the Great Sovereign.

Here, then, is the government demanded by our moral sense. Do we see it practically exhibited on earth? We see wickedness everywhere entailing misery; but often on the innocent as well as on the guilty. We see it suddenly and mysteriously punished; but we also see it going on, sometimes long, joyously and triumphantly, in the way of seeming success. There is reward enough for the good, and punishment enough for the wicked, if it be admitted that this is the beginning, the partial development of a mixed scheme, commencing in discipline and ending in retribution; but otherwise, and considered as a state of righteous retribution, this world can satisfy no one, whether he be holy or unholy. Hence we ask, if there be no other principle of human nature to bear witness on this subject?

3. We answer there is. It is *conscience*, which, directed to our own sins, first inspires shame and inflicts the anguish of self-reproach. Then it awakens fear that others will be urged

by their moral displeasure to hunt up our sins, and have them punished; and, finally, it constrains us to look both forward to another time of reckoning after death, and upward to the avenging Judge, who will by no means clear the guilty. Conscience stands before the sinner, pointing with one hand to the sin, with the other to a judgment after death, her eyes alternately raised to God and dropped with searching glances on the sinner's inmost heart. Then do troubles take hold upon him; then does he feel he must become reconciled to Him whom he has offended, or he must look with fear and horror towards the day of reckoning.

As conscience urges upon us the recognition of a righteous retribution after death, and reason shows it to be necessary both to vindicate the ways of Providence and to satisfy man's deep instinctive convictions, it may be well to mention a few considerations which seem to indicate a future state as the most appropriate place for a full and perfect retribution.

In looking at pains and pleasures as instruments of moral government, we see that they subserve three purposes at different stages of our existence:—1, in earlier life they are mainly monitory; 2, later they are both monitory and retributory (as, for example, the pain consequent on the intemperate use of any organ, such as the eye or the stomach). Later still, when activity declines and pleasures are less from the body and more from the mind, they become less and less monitory and more retributory. This is precisely the course we adopt with the positive or instituted rewards and punishments which we apply in training children at home or at school. At first they are applied mainly as incitements or discouragements; afterwards they are also used as punishments or rewards; until, finally, the child becomes so good or so depraved that we suspend discipline, and give him over to reap as he has sown—*i.e.* to receive the natural results of his previous course.

This enables us to understand the threefold use of hap-

piness and misery or pleasure and pain in the present world.

It enables us to understand, also, why this world should be the scene of only partial retribution at every period of life. Even in old age, men rarely receive according to all their works, because their probation or discipline is not yet ended.

It enables us, also, to understand how, as a scene of Retribution merely, a future world may supply much that is needed here, as, for instance,—

(a) Ample time and room for actions to work out all their consequences.

(b) Means to bring forth only fruit corresponding in character to our acts and motives,—no grafting of a foreign stock upon it through the agency of others,—no responsibility constantly blended with that of others,—no want of harmony between body and mind, the one feasted with luxuries of the higher and lower senses, while the other is tortured with bad passions and with self-reproaches,—no power of self-oblivion, through care and pleasure and sleep,—no deficient sensibility either of the soul or of its organs,—no presence of unharmonizing spirits among the good,—no ministers of blessing among the evil.

May it not be that the immediate interposition of God in meting out final rewards and punishments, that interposition which answers to our idea of positive rewards and punishments appointed by human governments, will consist mainly in removing at death the obstructions which now lie in the way of the character's producing its proper effect on happiness? It may be the act of Infinite Power, Wisdom, Justice, and Benevolence, taking man from the mixed lot in which he now is, for his trial and education, to one unmixed, in which he shall receive the natural fruits of his past life. Suppose, even now, the bad man, the sensualist, the servant of envious, jealous, and malicious tempers, or the hard-worked slave of the world's cares and behests,—now propitiating Mammon,

now offering sacrifices before the Divinity of Fashion or of Ambition, unmindful of his highest duties, of his own proper dignity, of the holiest and sweetest charities of life; hard to the poor, hard to his defenceless debtors, hard in judging men's motives,—suppose such an one suddenly turned over to the legitimate consequences of his past life, so that he should live only in the atmosphere of his own tastes, habits, and affections—all sleep, all care or pleasure that might divert his thoughts, all association with better natures, denied him, and his soul left alone with itself or with kindred spirits, and carrying everywhere a clear perception of its own unworthiness,—could the result be anything but the most intense and unmitigated misery?

FUTURE RETRIBUTION—MORAL AND FINAL.

We have now shown how human nature gives intimation of an account to be rendered after death, and to be rendered in our character as moral agents. We have also remarked, that the Retributions dispensed in this life, though moral, are but partial; that they indicate a moral government, begun but not completed; and we have surmised one great reason why it should be so. We have suggested that if the present life is one of probation and discipline rather than of a full and exact distribution of justice, such *incompleteness* in rewards and punishments is accounted for. Some of the obstructions which now stand in the way of the natural consequences of our actions we have pointed out; and, supposing these to be removed at death, we have asked, What, by the very laws of our nature, would be the necessary and inevitable result to the good and to the wicked?

In asking for these natural and necessary results, we by no means intend to intimate that there are not also positive or extra-natural rewards and punishments analogous to those which are appointed by human governments. Indeed, we

THE THREE WITNESSES.

can see a reason for such positive remunerations. When we educate a child wisely, whether at school or at home, we subject him to efforts and to restraints which at the time are painful. We do it because it is the only way in which we can develop moral and intellectual power,—the only way in which we can form good habits and principles, and mould the whole nature into a shape worthy of all honor. Now, if we succeed in our object, if the child yields cheerfully and profits faithfully by such a training, we are hardly satisfied with leaving him to the natural rewards of his well-doing. We would add to these, great as they are, some additional and expressive tokens of our delight and approbation. The "Well done, good and faithful servant; Faithful over a few things, I will make thee ruler over many things: enter thou into the joy of thy lord;" how natural all this on earth! and why not in heaven? And so with the reverse case. Does this child withstand our discipline, rebel against the yoke that is not only proper and lawful, but necessary for his best good, we do not leave him to the natural results of his misconduct as his only punishment.

But we are now to consider only, or chiefly, the natural rewards or punishments annexed to different courses of conduct. We are to ask, whether, in the constitution of man's nature, there are not provisions for Moral Retribution after this life. This is a view of Anthropology into which we might profitably enter at some length; for there is none fraught with ampler or more impressive teachings, and none, we may add, more neglected. He would render great service both to Philosophy and to Theology, who should consider our nature largely from what may be termed the retributory standpoint, who, in analyzing the powers, susceptibilities, and operations of the human being, should unfold, in respect to each, its inherent retributory functions. The subject might be considered subjectively and objectively; in the one case, discussing the rewarding or avenging power annexed to each faculty and mode

of action; in the other, considering the great personal laws given by the combined operation of our instincts, consciences, reason, and experience, and contrasting the essentially opposite effects of obedience on the one hand and of disobedience on the other. Take, for instance, the four laws of Sobriety, Relative Duty, Self-Culture, Religious Consecration, and institute the contrast just referred to in respect to each.

We will illustrate here, however, by one or two examples, taken from the *subjective* point of view. Take *Memory*. We are busy all our days in treasuring up a store of memories, pure and bright, earthly and sordid, or base and sensual. Too rarely do we reckon them over; too rarely do we revert to them, except by accident or for a special purpose. "It is greatly wise," says the poet, "to talk with our past hours." We seem hardly to think so. But the store is not lost, though forgotten. The sudden resuscitation of long-buried facts, the simultaneous and vivid reproduction of the scenes of a whole life, often experienced by men near death, may show us what is not only possible but likely. Suppose, then, that in passing through the last agony, the entire past of our voluntary lives is at one instant reproduced, as in brilliant panorama, every object distinct and bright,—Conscience standing by to point out and interpret; Imagination to paint what *might* have been in our past, and what *may* or *must* be in our future; Reason, with its resistless logic, to demonstrate the folly or wisdom of each act; and Sensibility, to feel all the appropriate exultation or shame, self-approval or remorse, hope or fear, confidence or despair. Suppose that memory takes in acts omitted as well as acts overt, every case in which we turned away our face from the poor, neglected to wipe away a tear, to hush an anxiety, to speak a kind word, every case in which we wounded by a thoughtless look or word, or depressed by a cold repulse.

Or take *Association*, and suppose that of the four principles

of suggestion* we shall be compelled to associate mainly, in a future world, by one of them, say *Contrast*. If unholy, every remembered sin would suggest its opposite virtue, and thus become blacker by the contrast, every pang of sorrow, or of envy, or of hate which we experienced made more hateful and agonizing by contrast with its opposite. So one might take up the several emotions and passions,—Pity, normal or abnormal, Reverence and Envy, Love and Hate, Pride and Humility, Selfish Appetite and self-forgetting Affection.

Such a course of illustration would be valuable, even to the believer in Revelation, because it would enable him to attach due significance to those words of awful but poorly-apprehended import, in which Scripture sets forth the Retribution in store for us; and further, because it would force on all, believers and unbelievers, evidence that if the mind is to carry its identity and also its temper and condition into another world, righteous recompense is inevitable. *Retribution coming* are two words that seem to be written, in characters of fearful radiance, all over man's threefold nature of soul, body, and spirit.

We know of no way in which the force of such considerations can be withheld, except by assuming that, at death, our moral characters are to be reduced to a neutral state, or are to be directly reversed. This assumption is as full of evil foreboding to the good as it is of encouragement to the wicked; and, unless warranted by cogent reasons, ought, therefore, to be rejected on the ground of its immoral tendency. What is there to warrant it?

1. The probable influence of death?—a change, so far as we can know, merely physical and organic, and no more touching the essential moral condition of the soul than the moult of its feathers by a bird, or the casting of its shell by a snail, affects its life or its specific nature and functions.

* Resemblance, contrast, contiguity in time or place, cause and effect.

2. The essential idea of moral character and personality? Does not this involve, as its most necessary element, freedom of volition, and a substitution, by a course of voluntary exertion, of principles and habits for mere instincts and impulses? Is a particular moral character impressed on any man, independent of any act or agency of his own?

3. Would the principles of Justice require or authorize such a change?

We come now to the third question involved in the Problem of Future Retribution:—Is it *to be final, conclusive both of character and of destiny?* This question does not, of course, admit of a full answer from our own nature alone. It is the specific point in the doctrine of Immortality on which Revelation was intended to cast the most decisive and novel light,—a future life and a moral retribution after this life being pre-existent doctrines among men. But there are certain facts in our nature that do seem to look towards a fixed and unalterable destiny at some period of our existence.

(a) The law of *temporary contingencies, terminating in an unchangeable state.* This law obtains with vegetables, animals, and men. Until a plant or animal reaches its full maturity, its size and vigor are contingent. Thenceforth they may be regarded, especially the former, as fixed. It is the same with men in respect to their bodies. Why not in respect to their souls? Is there not morally “a tide in the affairs of men,” a great crisis, a golden opportunity, as there are *irretrievable* mistakes, losses, and penalties, the effect of which would last forever, if the individual were to live forever on earth, and there were no interventions of a power greater than his own?

(b) The *law of habit*, which conducts us through a series of acts and changes, each voluntary in itself, towards a constant state, passive or active,—a state of moral petrifaction, which Omnipotence alone can reverse.

(c) The *essential perpetuity of the good or ill effects of certain*

actions which we all experience in our own persons and observe in the experience of others.

(d) And what bears more directly upon the question, *when* this destination shall be reached. The law that results which are irreversible follow in this life after no certain interval, in no particular way, after no particular warning, teaching us that on this question we must look beyond nature to Revelation.

FUTURE RETRIBUTION AND THE PROBLEM OF EVIL.

We have now pointed out wherein man's nature contains an implied pledge of a Retribution after death, both righteous and final. The question when probation shall end and final Retribution begin, is one which would seem to belong to Revelation alone. There are facts and principles, however, which intimate that probation may be arrested before the close of life, and that the individual may enter, then, on his unending moral career for good or ill. Do we not see some men whose lofty and holy spirit seems beyond defection, and others of whom we cannot but say there is no hope,—they are given over to blindness of mind and impenitence of heart? These results follow a long career of action in obedience to right motives, or in wanton and high-handed defiance of them.

Is it asked, whether there are not other facts which would indicate that probation may be extended beyond the term of our natural lives? We answer, that we know of none such. The inequality in the length of men's lives cannot be alleged as a ground of probability in favor of such a result, because—

I. Inequality of capacity, endowment, and opportunity is a great law of our condition here,—a law which could only be replaced (so far as we can see) by one that would make all not only equal, but as perfect, both in condition and capacity, as possible. The law, as it now stands, is the source of that variety in life and that free interchange and conflict of activities whence issue our greatest good.

2. Whatever disadvantage results from the shortness of our probationary period, is counterbalanced by a proportionate reduction in the measure of our accountability.

3. The same law holds in respect to retributions experienced on earth, through the natural course of things, as, for example, for prudence or imprudence. These retributions come to some sooner than to others, with less of warning, with more of suddenness.

Indeed, there is a most striking analogy observable between the retributions thus experienced in time and those which both the Bible and our own nature would lead us to anticipate after death. The terms which Shakspeare or Solomon employs to depict the final bestowal of these earthly rewards and punishments, may be transferred, as they often are, word for word, and with striking felicity, to the recompense awaiting us hereafter.

We conclude with some notice of a kindred topic, which must force itself on our notice whenever we discuss the subject of Retribution. This is the *Existence and Origin of evil*, a problem which has been anxiously considered for thousands of years, and which still remains unsolved, and—may we not add?—insoluble. It is well that there should be insoluble difficulties to teach us modesty, to exercise our highest powers of thought, and to lead to incidental but precious discoveries, like those in Chemistry which resulted from the vain pursuit of the philosopher's stone.

In what temper shall we approach this mysterious subject? It should be calm, self-distrustful, comprehensive. Partial and one-sided views are to be greatly deprecated. If a man choose to hunt only for the evils of life, physical or moral, or both, he will find enough of them. He who should gather into his field of vision only the desert wastes, burning sands, smoking volcanoes, and tempestuous clouds of our planet, would evince as little wisdom as taste. And so with him who should feast his morbid appetite for speculation with nothing

but the crimes, follies, and sufferings of men as developed in his neighborhood, his country, his age, or his race. The result objectively would be a caricature, not a portrait; subjectively, it would be suspicion, jealousy, and, perhaps, universal misanthropy. To this perverse course some men are urged by their unhealthy tone of body and mind, some by a rooted and engrossing sorrow, and some, alas! by a reckless and man-despising skepticism.

Opposed to this stands the error of those who overlook or industriously extenuate the ills of life. This was the case with the Stoics of old. It is the case with Pope in the Second Epistle of his *Essay on Man*, and even with Paley in his chapters on the Divine Benevolence.* There is suffering on earth, and the noblest spirits often experience the most of it. The only adequate solution, therefore, is beyond nature and beyond this life, in the hopes of a coming world, and in the light and consolations afforded by the Man of sorrows, the Friend of sinners.

Avoiding these extremes, and embracing candidly the whole truth, we find that there is a vast amount of moral and physical evil, and yet a greater amount of possible if not actual good. The first introduction of this evil is supposed by many to involve the Divine character so deeply, that we must either show it to have been necessary or exhibit it as the occasion of the maximum good, or else we shall be compelled to renounce our faith in an All-wise, Powerful, and Benevolent Creator. The dilemma of Epicurus, and the trilemma of Leibnitz, are framed on the same principles. Both assume,—

(a) That in creating the system of the world (natural and moral), God was bound to make it the best possible. This is optimism, and is not, to our mind, the true system of the universe, so far as we can read its constitution through the medium of our own consciousness and experience. If we

* In his *Natural Theology*.

write a letter, we are not bound, nor do we feel that we are bound, to write it in the best possible characters, or on the best possible paper. It is enough if we so indite it that it shall be easily read, and thus accomplish its specific end. So in making man and the universe, it were enough if God framed them so as to fully accomplish the great end of subjecting us, under propitious circumstances, to discipline and probation for a higher life.

(b) Another assumption is that we must demonstrate the permission of evil to have been a necessary incident to the system as originally constituted. This is the attempt of Archbishop King, and of Bishop Law, his Commentator and Editor. We cannot recognize their argument as a *demonstration*, but we readily admit the difficulty of conceiving a system of animal life and enjoyment to which some pain and suffering should not be a necessary incident. When we come to men and angels, *Moral Evil* would seem, in one sense, to be a necessary possible alternative to moral good, for man cannot attain to virtue if he be not free to sin. "Able to stand though free to fall," would seem to be the appropriate condition of a Being destined for an advancing course of knowledge, duty, and fruition. Who would prefer constraint—even if it involved no danger—to freedom, with such magnificent promises and prospects as those with which man was at first crowned? Viewed in this light, we see at once that Divine responsibility, if we may presume so to speak, terminated in making man morally free. He thenceforth must be answerable for the entrance of sin.

Sin admitted, who can say what might or must have been the effect of that catastrophe on the physical condition of man and of the globe? We all know how passion can disturb the functions of life, permanently disease the organs, and induce sickness and death. How know we that the organism of our bodies was not radically and permanently deranged by the one great act that brought death into the world and all our woe? And how

know we that surrounding nature, the instrument of man's progress and discipline, did not share in the general shock? There are affinities between the material and spiritual worlds which we know not fully, but of which we can conceive. And is it not, at least, possible that, when the eventful sin was perpetrated,—

“Earth felt the wound, and Nature from her seat,
Sighing through all her works, gave signs of woe
That all was lost.”

There is another point of view in which we may consider evil,—*i.e.* as the instrument of educating a greater good; for example,—

1. Monitory pains, such as hunger, inciting to self-preservation.

2. Pains and evils, through which we evolve virtues and high faculties, as courage through danger, fortitude through suffering, patience and magnanimity through injury, energy and skill through labor.

3. General laws seem indispensable; and yet inseparable from those laws may be particular irregularities, to prevent which, by miracle or other Divine interposition, would be to discourage foresight and effort, and, at the same time, to unsettle the constant and regular course of nature.

Everywhere Evil is attended with a multitude of compensations, some of which come spontaneously, as in the case of death; others through the intervention of our deliberate efforts. In this way we might say to any form of woe, Evil, be thou my good.

In attempting to account supernaturally for the origin of Evil, the Atheist, of course, has nothing to offer. He, again, who would represent the Governor of the Universe as malignant, must account for the abounding good which prevails on every side; and he who takes refuge in dualism must explain the unity of design running alike through evil and good.

There is but one solution that meets the difficulty,—“God made man upright, but he hath sought out many inventions.” This is in conformity with observed facts.

The relation of the sin of one to the sin of all is not really inconsistent with what we know of the interpenetration of actions and responsibilities which connect us with others of our own and of preceding times, and which so enlarges our susceptibilities to good and evil influences that *none* are too remote, in space or time, to have influence over our characters and destiny.

CHAPTER III.

THE PROBLEM OF DISCIPLINE.

THIS LIFE A STATE OF MORAL PUPILAGE FOR THE LIFE TO COME.

WE propose now to enter on the third of the four Problems to be discussed in connection with man's destiny. *Life a scene of Moral Discipline* for the Immortality which is beyond death is our subject, and the provisions for this Discipline, which are to be found especially in our own constitution, and generally in the objects and circumstances around us, will be briefly noticed.

There are various branches of culture, Organic and Physical, Intellectual and Æsthetical, Moral and Religious. All are necessary to a full and high development, and in a generous system of culture all should be carried on together and in due proportion. There is but one of these, however, which is within the reach of every human being, and this happens to be that which is most essential to the happiness and well-being of all. It is this which we are to consider now, and our object is to explain how everything in the mind itself—its different forms of culture, the place and time to which it belongs, the minds of others, and even the material world—can be made subservient, and were intended to be made subservient, to our *spiritual and moral progress*.

In answering three questions we shall be able to unfold some of our views. These are—1. What is implied by this phrase Moral Discipline as applied to the relations between the present life and the next? 2. What is the precise end to be aimed at in this Moral Training and Discipline, and

how far is that end really attained? 3. Why is it attained so rarely?

I. What is implied by the phrase Moral Discipline? We answer—

(a) The exercise of the *moral* powers. Muscular power is developed by the exercise of the muscles, as muscular skill or adroitness is evolved by an intelligent and systematic use of them. So intellectual power is evolved by using the intellectual faculties, and, of course, the same principle applies to our moral and spiritual powers. They must exert their strength, intelligently and systematically, for the production of definite moral results. It is not reading about duty, conversing about it, thinking, or hearing of it, that can build up the power and principle of moral rectitude in our hearts. We may weep under appeals to our sympathy or at the sight of spectacles of distress. We may be thrown into transports of indignation over wrong in others, or of compunction over sin in ourselves, as we listen to the appeals of oratory, or follow some powerful delineator of the workings of human guilt in a book or on the stage, and yet not be one whit the better in the eye of enlightened Morality or Religion. We should most carefully beware of substituting a sentimental pity for the distressed, or a sentimental admiration for virtue, or a sentimental piety which expends itself in passive emotions, for that sterner but truer and more earnest principle which constrains us to act in conformity with our sentiments, and thus secures that by acting we not only serve others but add to the stock of moral force in our own souls. Such spurious substitutes are worse than useless, since they turn our attention from the only true method of moral self-culture, and leave us to prefer the shadow to the substance.

(b) Moral Discipline implies not effort only, *but effort under difficulties*. We develop physical power in our frames through obstructions which they are required to overcome. We develop intellectual power by the same means in our scholastic systems,

being careful in each case to proportion the impediments to be surmounted to the strength and spirit of the pupil. Our great Teacher and Parent proceeds in the same way in respect to our future moral life. Difficulties, spiritual dangers, beset us on every hand, from within and without. Evil thoughts that assault and hurt the soul. External provocations urging us to excess in that which is lawful, or to indulgence in that which is unlawful. These, clothed in every possible disguise, lie in ambush through all our pilgrimage, and make an upright and holy life one scene of conflict.

Milton, in his *Areopagitica*, has pointed out, with all his force and opulence of imagery, the superiority of principles, thus elicited, trained, and compacted in the presence of danger and difficulty, over the cloistered unbreathed virtue which languishes in the shade of a Monastic retreat, or in the more peaceful and innocent walks of ordinary life. His views have much value as well as beauty, but he does not sufficiently consider that while the benefits of extreme temptation to our virtue are contingent, the hazards are certain and imminent. Here as everywhere else a golden mean should be observed.

(c) Moral Discipline for a future life implies the *alternative between success and failure, victory and overthrow*. This we might infer from what has been already said in treating of Retribution. It might be anticipated, too, from the very constitution of our mixed nature,—angelic on the one hand, brutish on the other, here allied to the whole hierarchy of spiritual intelligences, there claiming kindred with the beasts that perish. How wonderful that he who measures the distance even of fixed stars and weighs the planetary orbs in his scales, is, in his outward form, but a step removed “from a speechless animal wandering in the forests of Sumatra!” What, then, must be expected? Evidently strife between the higher and lower nature, and a fearful contingency attached to that strife. Shall the one spread its debasing leaven up through all the other, till the man becomes a reasoning and calculating

but selfish and sensual animal? Or, shall the other shed down its purifying, elevating influence, till the whole man, body as well as spirit, is lifted up and consecrated to duty and truth? What a fearful alternative! How easily is the issue made and decided against us at every period of life! How strenuous, then, ought to be our exertions!

II. We would ask, *What is the end of this Moral Discipline* applied to us in part by others, but more fully conducted by ourselves? It is to evolve, by slow degrees, out of the new-born child, out of that blind and unreasoning mass of capabilities and susceptibilities, the perfect man, the man of ingenuous, upright, manly, self-sacrificing, and devout spirit, whose charities are large; whose integrity is unblenching; whose self-respect and sense of purity are quick; who, never tiring in the service of God or man, looks with little complacency on himself or his past deeds, but presses on towards a higher excellence. If there are three words that can describe him, they are these,—*wise, holy, energetic*. Energy is the basis,—an active, resolute, and all-subduing *will*, enlightened by a *wisdom* that looks carefully for the best means and ends, and purged and cleansed by a vigilant *conscientiousness*. Such an energy, if not genius, is something greatly better than the fitful, insurrectionary, though ever so brilliant, power called genius. It is the secret of a Washington's glory,—of his who was greater than Washington, St. Paul, and of Him who, as He spake as never man spake, so He lived as never man lived. He combined the gentleness of a child, the dutiful spirit of a son, the tenderest affection for friends, and the readiest pity for the sorrowing, with a grandeur of aim, an irrepressible force of purpose that has wrung from Skepticism itself the most splendid eulogies.

III. But by whom, except by Him, has this faultless perfection of our humanity been attained? Who has approached even near the symmetry, beauty, and completeness of the perfect man? Millions of human beings are all the while spring-

ing into life; all start on the same career, where nothing but strenuous moral effort can build them up to worth and enduring happiness. All are taught by sages and by poets, by priests and by lawgivers, to conceive, to apprehend, to struggle for faultless moral and spiritual excellence. And yet not one of all this countless multitude has ever attained it except that peasant cradled in a manger, and who, during his wonderful ministry of power and love, had often no place in which to lay his head.

How do we account for this fact—but one perfect man!—and he born of no human father!—tutored and disciplined in no mere earthly school?

But one of two causes can be suggested for this universal deviation of the actual from the ideal or normal man,—this non-conformity of the individual to the great features of its type. The first is, that there is a fault and infection in the very nature itself, such that no *vis medicatrix*, no self-restoring power, no recuperative energy of its own, will suffice to bring it back to perfect health. The second is, that though the child be in a normal state, the training to which it is subjected in early life, and that to which it subjects itself in later years, is so abnormal that deep and pervading defects must result.

We doubt not that both of these causes operate, and in a full discussion of the subject both would need to be developed. We look at it here, however, only from the natural standpoint, and as we find the human family now. We shall, therefore, limit ourselves to a few suggestions in respect to the mistakes we make in our systems of Moral Discipline at both the periods indicated above.

In early life the child presents an object of unspeakable interest. He is about to enter on the morning not only of this life but of an endless future, and this dawn of his eternal day is apt to spread its hue of light or darkness over all that follows. He is in the hands of others, too, without self-determining power, as he is without knowledge or developed

conscience. How mysteriously, at the very opening of our being, do we thus meet the great fact that pervades alike the system of Nature and of grace, the fact that *vicarious effort*, the agency of other than ourselves, is to procure for us much that we enjoy or suffer! And how fearful the responsibility with which their relations to this little one charge parents, nurses, sponsors, teachers, guardians,—all, indeed, who approach his tender person!

Three eventful periods occur soon in every life:

1. *The period of instincts*, aimless at first, but soon urging to excess in appetite, anger, pride, envy, fraud. Now is the time to develop moral self-control,—control not by fear only, but also by moral suasion, and, therefore, *self-control*,—self-control on the ground that he has a moral Law to respect, and a moral force within to call out and use. How rarely is due care given to this early stage of moral discipline!

2. The period of *awakened* and *urgent self-consciousness*, inducing morbid regard to the opinions of others, distrust of self, of parents, of all save companions. In danger as the child now is of becoming a slave of custom and opinion, *self-reliance*, *on principle*, is to be inculcated with the utmost assiduity.

3. *The period of activity, professional or otherwise*, when powers are most concentrated, and the man too often becomes a mere *conventional man*, or a bond-slave of some sordid end like money, or of some base appetite,—the highest powers of Judgment being brought down to sense, like Samson grinding at the mill.

ADULT LIFE A SCHOOL OF MORAL AND SPIRITUAL SELF-CULTURE.

We desire to point out distinctly some of those provisions in the present constitution of things which may become helps or hindrances in the work of Spiritual Self-culture according as we bear ourselves towards them. They are like

the soil, sunshine, and rain, which may bring to the husbandman a luxurious harvest of grain, or a no less luxuriant crop of pestilent weeds, or an unsightly and sterile waste, according to the system of husbandry he may adopt. The analogy is so just that Bacon, in his *Advancement of Learning*, proposes that this moral husbandry, this work "of reducing our minds to virtue and all good estate," shall form the subject of a special work, to be denominated the *Georgics of the Mind*. He notes it as a work much needed; and assuredly such a treatise as he suggests, and gives some hints for, is still a desideratum in Literature. A noble service will he render who shall compose it in the large and philosophic spirit which such a theme demands. Too generally men act as if in mature years they had done with the work of self-culture. Some one has said that, intellectually, most men have seen their best at thirty or thirty-five,—that is, they do not usually enlarge essentially, after that period, their stores either of valuable knowledge or intellectual power. If this is even measurably true of intellectual culture, it is yet more true of that which aims at the formation of the heart and conscience. Multitudes still bent on intellectual improvement are content to remain in moral tone what education has made them, or to become what outward circumstances may prescribe. They do not consider that Elementary Education has failed of its only legitimate end if it has not awakened and established the spirit of progressive self-culture. They do not remember that all outward influences may be subordinate to the soul's growth in beauty and goodness through the good help of God and through that living inward power, which is like the organizing growing force in plants. They are content to allow external agencies to deposit their materials about the character, and to petrify into a solid and all but impassable barrier between them and their own true welfare, which is but another name for true progress.

The materials for self-discipline, to which we shall advert,

may be found:—1. In ourselves. 2. In others. 3. In books. 4. In *Matter*. 5. In the constitution of the Mind. 6. In Language.

I. Would we discover the *difficulties* in the way of *a thorough moral self-culture* which *spring from OURSELVES*, we must distinguish those (*a*) which belong to us in common with all other men, and (*b*) those which are peculiar to us as individuals.

(*a*) Of those which attach to us as men, we notice but one, and this belongs to our will,—our self-determining power. We use this term, not because it expresses precisely the idea we would present, nor because we desire to give in our adhesion to the philosophical theory which that term is sometimes used to designate. The power in man to which we refer is one peculiar to him, and it serves to invest him at once with self-possession, self-dominion, and a capacity for *self-formation*. It may be regarded as the joint result of the faculties which conceive of an action under the two notions of moral rectitude and utility, which summon before the mind whatever motives urge to the performance of such action, and which, under their urging or restraining influence, decide to do or to neglect what we call our duty. It is possessed in different degrees by different men, but by all is possessed in its potential form, so far as to make them moral persons, and charge them with power for moral self-discipline.

What difficulties attach to the possession and exercise of this power? Generally a *vis inertiae*, an extreme indisposition to that strenuous effort which is needful in order to withstand evil inclinations, to break up bad habits, and to establish good ones. This opposes itself, for instance, to that effort of attention by which we call up the duty, with its appropriate motives; to that by which we steadily and thoroughly survey both the duty and the motives until we come to feel something of their appropriate effects; to that, also, by which we recur to those topics of thought in order to recruit our declining faith and deepen and strengthen the convictions which com-

mand us to act. And especially does it array itself against that effort of the will which would embody our moral convictions in corresponding moral actions. This last is all-important; otherwise the result of all our knowledge and meditations will be but a sickly sentimentalism, or an ultimate decay of all moral sensibility. There is but one way in which opinions can become things, and holy sentiments ripen into holy principles, and that is by right actions in the presence and under the influence of right motives. Even when this course is taken, there is danger of settling, through the force of habit, into a mechanical and unspiritual, because not realizing state. To keep alive a generous enthusiasm, which seems like the very soul, the living breath of virtue, we must cherish our original and most vivid conceptions of duty and religious responsibility, and, above all, must we invoke His presence and aid who alone can send down fire to kindle the prepared sacrifice.

(b) The difficulties in ourselves, that result from our natural or acquired *peculiarities* of character, can be met only by those who understand them. Here, again, thorough self-knowledge is the condition of moral self-culture. We must discover, by careful observation and the aid of others, wherein we deviate from the common type of a perfect humanity. We are to do this, not in order to obliterate our peculiarities,—a result which is neither to be hoped for nor desired: God has blended the few elements that enter into the mental and moral constitution of men in such endlessly various proportions, that no two individuals were intended to be alike; but our prevailing faults, our besetting sins, need to be marked and watched. If, for example, we have too little Imagination, we are to adopt that course of self-education which will nourish and invigorate it; if we have too much love of power, we must shun situations in which we could wield it in large measure, and with little immediate responsibility. We should consider that such infirmities and obliquities are ours not to be indulged, but to be treated

like a fractured limb or an unruly animal, with such vigorous and wise discipline as will secure their reduction to the common standard. We should consider, too, that almost every excess in one direction is apt to be counterbalanced by excess in the opposite, as, for example, irascibility by generosity and a sense of justice, strong sensual appetite by a strong will and active conscientiousness; and that one of these can be employed in the subjugation of the other. And, again, we should observe that a passion may be employed in its own subjugation. Let the irascible man resolve that he will indulge excessive anger only for his own faults or the faults of those who are his superiors, and who control his worldly interests, or that he will reserve its heat and violence for the benefit of the down-trodden poor man whom he can shield against the extortions of the unrelenting creditor. Let the vain man, too fond of approbation, resolve that he will accept applause only for good deeds performed from a worthy motive; and it shall soon appear that, even in respect to our congenital weaknesses or sins, we are not without means of effective self-discipline. Our great resource, however, must be in our general moral force, and in the succor of Him who delights to rescue the godly out of temptation.

Many of our peculiarities of character are superinduced by education and habit. Take the sordid, self-seeking man, with great energy and skill, which he employs only in the service of an intense and exclusive egotism. He is to remember that this acquired fault, however imbedded in his character, is none the less criminal, and that to combat it he has the strength common to all men. He has, too, a power and sagacity, acquired by long-continued though perverse exercise of his faculties, which may avail him in a higher and holier service. He has dormant moral sentiments, which may be roused by meditation and prayer. And he has the choice of some expedient like that which Bacon recommends, as at once "the most compendious and summary, and also the most noble

and effectual, for reducing the mind to virtue and all good estate, which is the electing and propounding unto a man's self good and virtuous ends of his life, such as may be in a reasonable sort within his compass to gain." This is safe, for, adds Bacon, "By aspiring to be as God in power, angels fell; by aspiring to be as God in knowledge, man fell; but by aspiring to be as God in *goodness*, neither man nor angels shall ever fall or transgress." In the case supposed, let the selfish, sordid man resolve that, while pursuing his vocation in life, he will see to it that, day by day, he does as much good as possible to the greatest number of persons; that by kind words and looks and deeds he scatters sunshine along his path; that no man shall have occasion to remember that through him he has suffered in his feelings, character, property, or self-respect; that he will make his business the occasion of promoting the welfare of as many as possible, and will hold the profits of it as a fund for God's poor and the world's benefit. How his selfishness would, by such means, insensibly melt away (before such self-discipline), while he would learn that it is, indeed, more blessed to give than to receive!

II. We now come to the *occasion for stern self-culture supplied by OTHERS.*

At all times and places those about us may become our moral and spiritual helpers if we profit by their benefits and their injuries, by their wise and unwise counsel, if we use them as means for keeping fresh and warm our social and domestic affections, and giving play to all our virtuous sympathies. On the other hand, they will be sore "lets and hindrances" if we suffer them to master us, either by the wrongs they inflict or by the service they render, so that we surrender our proper self-command and become, in the one case, vindictive and contentious, in the other, pliant and obsequious. A due mixture of self-respect and respect for others, of independence and dependence, is the golden mean.

Besides these difficulties and dangers that appertain to men

as men, there are further dangers resulting from the social condition of the age and land in which we live.

In our own age, there are several peculiarities that greatly affect character and promote or obstruct the work of self-improvement. The intense and universal activity which characterizes it, both in its practical and its speculative side, is one of these. It is unfriendly to that calm and comprehensive thought, without which real self-culture in the heart is wholly impossible. It is unfriendly, also, to steady exertion in any one line of improvement, and it goes to unsettle all our opinions, beliefs, and even intuitive sentiments.

Without specifying the other dangers to be apprehended from the spirit of the age, or attempting to unfold its subtle and complex agency, we make one or two additional observations.

It cannot be repeated too often, that the most pressing difficulties and dangers from this as from other sources, can be transformed into means of improvement, if met in a resolute, enlightened, and conscientious manner. Nor should we forget that the reverse is equally true of the advantages which distinguish our age, and which, through our folly and perverseness, can easily be converted into foes to our moral welfare. It would be more grateful to set forth these advantages, as it is always more pleasant to be prophets of hope than of despondence, and we rejoice that we are able to see much in our times to inspire gratitude and awaken cheering anticipations. But we are always to remember that no blessing comes without its alloy, no scene of action or enjoyment opens that it is not surrounded with difficulties to tax our strength and watchfulness.

Two mistakes are apt to be made in respect to the spirit of the age:—the one that of implicit or almost unquestioning submission, the other that of uncompromising and unyielding resistance. These errors are apt to coexist at the same time, but in different persons, and they tend, of course, to produce or to aggravate each other. By the first we are robbed of our

personality and proper power, and instead of contributing to modify and improve our age, we yield implicitly to its moulding influence. By the second we cut ourselves loose from the sympathies and correct apprehensions of others, are led to attempt impracticable tasks, and sink by degrees into apathy and misanthropy. Both, therefore, are dangerous.

The danger from resistance is twofold:—that of renouncing the present in favor of the past, and that of renouncing the same present in anticipation of an imagined future. Those who take these opposite courses stand like travellers in the midst of an Eastern desert, seeming to see pleasant fountains both before and behind them. The evils that we now have we feel painfully, but distance and delusion conceal those which lie in the remote of past or coming time, and hence we see two schools of Social and Religious Reformers,—the worshippers of the Future and the Blind devotees of the past. Both forget that evils are inseparable from man's present condition, that they are part of his necessary discipline, and that the progress of society can only remove the more gross and sensible evils to substitute such as belong more intimately to the mind. The improvement of our higher nature, and preparation for another scene, is the grand end of the “few and evil days of our earthly pilgrimage,” and that mind only apprehends or performs its mission which sets this object ever before it. It is the most effectual means, too, to abridge the sufferings and enlarge the enjoyments of men on earth; but that is a consummation to be expected only in a degree.

III. We notice briefly the moral and spiritual danger to be apprehended from *Books*. By these we can, if we please, translate ourselves from the present age or place, and become surrounded with that which belongs to a past era in history or to a distant land. This is often a process most useful in order to understand our historical position, and that we may qualify ourselves for its duties. The further use of books as counsellors and comforters, as instruments through which we can

employ, with equal profit and delight, all our meditative and imaginative powers, we need hardly insist upon. They invest those who use them with a more than fabled power. Suppose that by a wave of the hand we could summon round us the mighty dead,—Moses and Solon, David and Homer, Solomon and Plato, Paul and Seneca, of ancient time, or Bacon and Boyle, Locke and Leibnitz, Pascal and Grotius, Shakspeare and Milton, of later days,—and with these join the master-spirits of our own time, that we could listen to their discourse ourselves as each, in his own language and in the spirit and philosophy of his own time, sets forth his views of God and man and Nature, and of the events and interests that most concern mankind. All this is done in substance, though not in form, by those who surround themselves with the living influence of good books. A diligent and thoughtful reader not only converses with the good and wise of all times and lands, but he hears them when uttering their most weighty thoughts, and breathed upon by the sweetest odors of fancy or the divinest inspirations of passion and imagination.

Yet here, as elsewhere, there is an alternative. As there are good books, so there are bad ones; and as good books wisely used are an inestimable help in self-culture, so when used unwisely even the best of them may become hindrances. There are two questions, then, in this connection for him who is bent on spiritual self-culture:—first, *what shall he read?* and second, *how shall he read?*

In respect to the first, we need hardly say that we are not prepared to restrict the reading of those who are earnest for progress in the moral and religious life to books professedly religious. The play which is given to the faculties through other literature, as well as the knowledge with which it abounds, may conduce vastly to a culture strictly religious. But as moral beings, charged with the education of our own hearts, we must use discrimination, and we should apply, first and foremost, *moral tests* to the books we read. And in this

age, when every species of Literature is made the vehicle of philosophical opinions, History, Novels, Poetry, and Satire being in truth the most powerful Teachers of that which calls itself the philosophy of progress, a twofold test must be applied, especially to works emanating from the Imagination,—the first regarding them as literary, the second, as philosophical.

As *literary*, let them be tried by these criteria (a):—Do they improve and refine our taste for the beautiful in Nature? Do they strengthen our reverence for goodness, deepen our horror and contempt for wickedness, cause our passions to move only at the command of virtue, never enlisting our sympathies or approbation in behalf of the unprincipled, the licentious, or the purely frivolous?

(b) Do they keep alive the freshness of our natural tastes and affections,—the child's heart in the man's breast?

(c) Do they impel to an active rather than a passive virtue?

As *philosophical*, we consider only the popular and favorite theme *Progress*. In respect to such works, we should ask,—

(a) Does this philosophy leave, as a living impression, the lesson that individual moral self-culture is the great thing? or does it lose itself in declamation about the progress of the Race, while its views of man's individual destiny and capacity are of the most gloomy or vague description?

(b) Does it lose sight of the truth that we buy all our blessings at a price; that neither individual nor social progress comes spontaneously; that we must labor and deny ourselves, and when we transgress this great law, must experience such pains and penalties as the Governor of the Universe has ordered? Let us beware of maudlin sympathy for criminals and for the improvident or vicious or idle poor.

(c) Does it recognize the *whole of man*, both in himself and in his relations to God and Nature, to Time and Eternity? or

is it occupied with self-contemplation, seeing only itself in Nature, and even in God? Then it is the Philosophy of Pride and Vanity, and utterly inadequate to the work of individual or social amelioration.

IV. *Matter a Moral Disciplinarian.* We find ourselves connected with two different systems of matter,—one pertaining to our own persons, made up of living organs, which we continually employ in mental and physical functions, and which we call our bodies; the other without, and independent of, ourselves, composed of a vast variety of objects, animate and inanimate. A most important part, both of our intellectual and of our spiritual culture,—of our preparation for a higher and holier life,—seems to result from the intimate relations which we sustain to matter. Our bodies, considered by themselves, serve a great purpose in the education of the Soul; but they are found to serve that purpose much more, when we consider them as media through which the mind is to develop its powers by acting on the matter of the external universe and by experiencing again the reactive force of that universe upon itself.

At the outset, in infancy, the powers of the soul are dormant. Matter makes its impressions on the organs of sense. These impressions rouse the soul to observe, remember, compare, and infer; and thus the education of the senses, the early processes of perception, become all-important means of mental development. Perception is soon followed by desire, and by voluntary motion; the child wakes to the consciousness of power; Imagination goes abroad on its excursions; relations are established with others; and at every step there is exercise not only for the mental but also for the moral faculties,—for self-restraint, for obedience to rightful authority, for justice, fortitude, kindness, forbearance, generosity. While the child rises from helpless infancy to adolescence, he uses almost spontaneously the external World as his great Teacher and Disciplinarian, and the manner, the moral purpose, with

which he is led to use it, will determine materially the character for good or evil which he forms.

So when we consider the necessities of the body for food and raiment, for light, air, and heat. The voluntary agency of man must be interposed in order to adjust the quantity and quality of these to the delicate organism of our bodies, and to the ever-varying tastes of individuals and nations. In procuring the materials for food, raiment, and habitation, and preparing them for use, a large part of all the *Industry* of the world is employed; and in the efforts of that Industry man's moral nature is all the while on trial. Matter thus becomes our schoolmaster; and if we avail ourselves conscientiously and patiently of its manifold opportunities, we shall not fail of rising to a lofty stature of virtue. The poor widow, in her lone garret, struggling against want, ashamed to beg, disdaining to steal, watching over her little ones, and leaning with unfailing trust on God and her own courageous heart, shall mount up to a moral pinnacle which kings might envy. Out of her corporeal necessities and those of her children she extracts material for the noblest spiritual growth. Lazarus, clutching at the crumbs which fall from the rich man's table, because he uses his poverty well, is carried by the angels into Abraham's bosom, while Dives, because he abuses the abundance in which he revels, lifts up his eyes in torments. Thus the noblest moral trophies can be won on the humblest theatre, as they may be easily and irretrievably lost on that which the world most honors.

Riches, which are but another name for superabundant material possessions, are styled by Bacon "the baggage (*impedimenta*) of virtue." Experience proves that they are so, since they who have great riches with difficulty attain to the simplicity, the humility, the *bénéficence*, or the integrity which go to make up spiritual wealth. Neither is extreme poverty favorable to moral self-culture, since the very indigent are sorely tempted to discontent, envy, deceit, and distrust of

God. The prayer of Agur, "give me neither poverty nor riches," points with the precision of Divine Wisdom to that path where the things that a man possesseth are most likely to conduce to his spiritual improvement. "Seek," says Bacon, "no more than you can get justly, use soberly, distribute cheerfully, and leave contentedly."

Everything in the relation of our bodies to the external world affords occasion for moral self-culture. Of the aliments which are offered to us, some are both useful and agreeable, others are more agreeable than useful; some are agreeable but hardly innocuous, and others are in a vast proportion of cases noxious though pleasant. Of the last, the pleasure which they afford is immediate, and often vivid, while the injury which they are to inflict may appear remote and contingent. What a sphere opens here for forecast, self-denial, and discrimination! Even where food is innocuous in its physical effects, it may exert a retroactive influence on the mental or moral nature, which is to be deprecated. The irascible and libidinous need a diet very different from the gentle and pure. Some should beware of too much animal food, some of too much vegetable. Some need the chastisement of a fast, some the cordial excitement of a feast. Even in regulating the quantity of light and air and heat which we live in, there is room for a conscientious and thoughtful self-discipline. A certain portion of natural light is necessary to the highest physical and mental condition, and to ascertain this portion and secure it becomes a duty. It is the same with every other external agent which acts upon the health of body or of mind.

The body itself is a powerful agent in the work of Moral Discipline. Is it in full health, out of that health spring moral dangers as well as advantages. Is it deformed, or subject to hereditary disease, or marked by congenital peculiarities, each of these circumstances is a challenge to increased earnestness and vigilance in the work of self-mastery. It is a

loud call, also, upon the sympathy, the assistance, and the delicate consideration of friends and companions. And since all are liable to sickness, all are to guard against it by an intelligent and faithful use of preventive measures. When suffering from its visitation, they are to use all proper remedial means, and are to qualify their sufferings with kindness towards others, with patience and resignation towards God. They are never to forget that their souls are supplied with an almost inexhaustible store of moral force, whereby they can withstand the depressing effects of disease or adverse physical circumstances, and transform them into means of spiritual self-improvement, and gradually rise not only to dominion over themselves, but also over their material organism, and in some sense even over the external world. It is delightful to observe how the soul, in childhood and youth, almost wholly controlled by external objects and impressions, can, through a normal course of culture and development, gradually emancipate itself from the slavery of the senses, and come in old age even to look upon the body as a clog and an incumbrance.

We have merely touched here upon a great theme, which deserves ampler development. What we have said may suggest the Final Cause of the intimate relations in which we have been placed towards matter. It is one of the grand instruments appointed by God to subject us to trial and discipline. One of the chief means through which we work our way to indefectible purity and glory or to remediless shame and misery. He takes but a narrow view of man's body who regards it as a mere contrivance for elaborating organs out of germ-cells and cellular tissue, for carrying on the chemistry of life, and upholding the machinery of bones and sinews, nerves and muscles. Man does not live by bread alone. As a self-conscious and responsible agent, under education for a better life, he needs an organism through which he can render all Nature subservient to his moral needs; and He who has

given him a frame so wonderfully and fearfully made, is therefore more than a mere mechanician, more than a smith or Vulcan. He is a Father and Judge, a moral Governor and Disciplinarian, who gives liberally to his offspring, but proclaims that to whom much is given of them much will be required.

V. *Mind its own Moral Disciplinarian.* As in the constitution of Nature and in the relations which we sustain to it we see manifold provisions for the moral discipline of the soul, so it is in the constitution of that soul itself. Its intellectual powers, its moral sentiments and capacities, its affections and susceptibilities, are all so many *occasions* for the exercise of moral self-culture. Every faculty and susceptibility is to be developed by exercise; and every step of that development requires, on our part, watchfulness and conscientious self-mastery. *Self-formation* is our great work in this life, and it is a work in which we may ignominiously fail or triumphantly succeed. The understanding may be reared to the love and gradual comprehension of all truth; or it may become infested with hateful error and be brought to love darkness rather than light. So with the Heart, the Conscience, the Imagination, and the Taste. Each may be a means of misleading the others, and each may itself become essentially and hopelessly corrupted; as, on the other hand, each may, through a true self-culture, become our helper and joy. This species of self-discipline, however, opens so wide a field for remark that we can merely indicate it here. As matter and mind is each in itself a school for self-discipline, so there is another which is intermediate between them, and to which we shall call attention for a moment.

VI. *Language a School of Moral Discipline.* In its functions, language is essentially spiritual; but in its instruments it is both corporeal and material. In ordinary discourse, we use the organs of the body; in the Arts of Design, which form a species of language, we use inorganic material substances.

Language, or the power of *expression*, is possessed in greater or less degrees by every sensitive and intelligent being that is known to us. Wherever there is feeling, thought, purpose, or volition, there we find some corresponding power of manifestation. Gestures, attitudes, instinctive cries, are all significant of internal or subjective conditions. And when we ascend in the scale of being, we find that, as the mental capacities are nobler and more comprehensive, in the same proportion the faculty of utterance or expression is more developed. In nothing, perhaps, is man's supremacy more obvious than in the transcendent gifts of language with which he is endowed. To a natural language, vastly richer and more varied than any animal's, has been added the power of *speech by means of articulate sounds*. The all-important part which this kind of language bears in the Education and operations of the soul must be evident, when we compare the condition of the un instructed deaf mute with ordinary persons of the same age, or with himself, after he has but imperfectly mastered that best substitute for speech,—the art of writing.

Language, like all our other endowments, *puts us upon trial*. It opens communication between our souls and other beings, created and uncreated. It makes intercourse with the Supreme Being possible. He speaks to us through his works (Nature is a language), through his ways (Providence is a language), and through his Written Word. We speak to Him in praise and prayer and adoration, whether by word or act. Language makes it possible, too, that we should know something of the subjective states even of animals, of their desires and feelings, while between man and man it is the great bond of union and instrument of co-operation. It is to the intellectual and moral life of society what capital is to its industrial or material life. Used aright, it is the parent of boundless blessing; abused, it is the source of immeasurable ill.

In acquiring the use of his senses in perception, the child passes, as we have seen, through a most important stage of

education. He passes through another stage in the acquisition, first, of his native language; then of other tongues. His intellectual and moral faculties are all engaged in the work, and the results to his character depend on the manner in which his own part and that of others, connected with his training and education, have been fulfilled. When once mastered, language, like knowledge, becomes a *power*, and it is a power for evil as well as good. It invests us with fearful sway over the happiness and welfare of others. It clothes us with an awful prerogative in respect to ourselves, and it gives to all who speak to us by voice or pen a like prerogative. We need not wonder, then, at the pregnant maxims which have been multiplied on this subject,—“If any man offend not in word, the same is a perfect man;” “If any one among you seem to be religious and bridleth not his tongue, but deceiveth his own heart, that man’s religion is vain;” “By thy words thou shalt be justified, and by thy words thou shalt be condemned.”

Words, looks, gestures, acts, all become *signs*; nor are they only signs: they are also *means*. For instance, in moral and religious self-culture, if we are sincerely and earnestly bent on improvement, we shall find that, to use the sign appropriate to any temper or disposition of mind, will contribute much to induce such disposition and to make it a habit of the soul. To look pleasantly is a way, as the child knows, which helps us to feel pleasantly. To do an act which is significant of kindness and good will, promotes the corresponding state of heart; and on the same principle outward acts of worship towards God, performed with a reverent spirit, react powerfully and benignly on the spirit of devotion in the soul.

CHAPTER IV.

THE PROBLEM OF REDEMPTION.

WE have had occasion, more than once, to refer to the *actual*, as deviating greatly from the *normal*, in human nature. While in the animal and vegetable worlds almost every individual conforms to the fundamental type of the species, in our race *non-conformity* seems, at present, to be the rule. Made for duty more than for anything else, man usually postpones it to interest, to pleasure, or to passion. Made to remember God in all his ways, and to regard Him with supreme reverence and affection, he continually prefers the creature to the Creator, and loves the praise of men more than the praise of God. And this seems to arise less from extraneous causes than from an essential proclivity of man's heart in its present state,—one which leads him, while preferring the better to follow the worse, and which has wrung from serious minds, in every age and land, the bitter confession, "What I would, that I do not; but what I hate, that do I."

This all-prevailing moral derangement in our souls—the very fault and infection of nature—is witnessed to us by our own *consciousness*, by the *testimony* of the best and wisest men in Pagan Lands, and by the collective *experience* of six thousand years. Our hearts distinctly teach that we *ought* to prefer the right and the true before all things; and yet that we fail to do it if left to our natural strength. Those hearts proclaim that the present and transitory *ought not* to be exalted, as it is, above the enduring future; that the selfish affections ought not to triumph over the social, the earthly over the heavenly and divine. That we are thus "lost by

“nature” is the witness, then, of our own souls, and it is confirmed by all that we see among men. They who profess to make least account of man’s native depravity are as ready as others to assume, in practice, his violent tendency to a selfish, unspiritual life. The mere man of the world admits that his faith in human nature is apt to become weaker the longer he observes and the more he deals with it. And the maxims which regulate the intercourse of men everywhere,—to what a mournful extent do they proceed upon principles, not of mutual confidence, but of mutual distrust! Add to all this the confessions of good men, speaking out of the fulness of their own humiliating experience, the despairing lamentations of those who had tried in vain the resources of man’s unaided wisdom, and the monuments of its own imbecility which the world has reared, when left to itself, with no Revelation, no Saviour.

The impotence of Philosophy stands confessed in its history and in the admissions of its noblest representatives. Take the four great schools of ancient time, and we find that, respecting *God and his relation to the world*, this, according even to Gibbon, was the best they achieved: “The Stoics, not conceiving of the creation of matter, did not sufficiently distinguish the workman from his work; the Platonists made their spiritual God an idea rather than a substance; the Academics doubted whether there were a God; and the Epicureans boldly denied Him.”

In respect to the *Immortality of the soul*, Gibbon, whose erudition will not be questioned, affirms, “The writings of Cicero represent, in most lively colors, the ignorance, the errors, and the uncertainty of the ancient philosophers with regard to the immortality of the soul. When they are desirous of arming their disciples against the fear of death, they inculcate, as an obvious though melancholy position, that the fatal stroke of our dissolution releases us from the calamities of life, and that those can no longer suffer who no longer

exist." The ignorance of man on all religious questions, his deep moral degeneracy, and his hopeless condition if left to himself, is the theme alike of poets, moralists, and sages, and is touched upon with special force by Socrates, Plato, and Aristotle among the Greeks, by Cicero, Seneca, and Juvenal among the Latins. Said Socrates, "*Ye may give up all hopes of amending men's manners for the future unless God be pleased to instruct you.*" And Plato declares, "*Whatever is set aright and is as it should be in the present evil state of the world, can be so only by the particular interposition of God.*"* Both these great men anticipated the advent of a Teacher and Saviour sent from God; and speaking of Platonism, and its relation to Christianity, Ackerman has well said, "*The essence of Christianity consists in its remedial power; that of Platonism, in aiming to reach such remedy.*"

Thus, when it looks inwardly upon itself, and outwardly upon its achievements in time, the soul confesses to self-distrust and self-despair. For effectual self-restoring power, it looks away from earth, crying, "*Cease ye from man, whose breath is in his nostrils;*" "*Soul, thou hast destroyed thyself; in God alone is thy help.*" And that help must come in the shape of *clearer instruction, of more efficacious assistance, of more certain ground for the pardon of sin.* *Has it come?*

* Plato in *Apolog.* *Socratis*, and *Plato de Repub.*, lib. vi. See also *Plato in Alcibiad.*, ii.; *Plato in Phædone*; *Plato in Epimenide*; *Plato de Legibus*, etc. Also the *Tusculan Questions* of Cicero, the *Satires* of Juvenal, etc.; the *Phædrus* of Plato; *Aristot. Metaphys.*, lib. ii. cap. ii.

PART IV.

THE BIBLE A WITNESS.

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GOD has spoken to the world through *Nature* and through *Man*. Is it not likely that, as a Father and a Lawgiver, He would also speak through *articulate language*, the most perfect organ of communication known to us? Such a Parent and Ruler is likely to omit no means for expressing his good will towards his offspring and subjects, no opportunity of testifying solicitude for their welfare. Were there, then, no special need of it, He would still be moved by his own abounding affection to multiply expressions of regard. Extreme need, however, as we have seen, does exist in a threefold sense; so that the *anterior probability of a written Revelation* is sufficiently clear.

And there is a Book which claims to contain such Revelation. It claims to embody a scheme of Redemption for man as a sinner, who needs pardon, illumination, and spiritual succor. It is called *the Bible*, or *the Book*, and whatever may be its origin, it certainly deserves attention. As a psychological phenomenon, a fact in the history of literature and of man, it can hardly fail to arrest the notice, as it is entitled to the profound consideration, of every philosophic mind.

The previous parts of this work have grown so much upon our hands that no room is left for the full development of the argument which we proposed to present here. It will be reserved, therefore, for another Treatise. We merely indicate some of its leading positions, without attempting to enforce them by the appropriate proofs and illustrations.

The *history of this Book is remarkable*. It is the work of at least thirty different pens, wielded by men in every possible rank and profession in life, from kings to herdsmen, from

Judges and Lawgivers to taxgatherers and fishermen. They lived in different and distant countries, were many of them "unlearned and ignorant men," and wrote through fifteen hundred years. Many a name of Greek or Roman celebrity, down to the age of Trajan, has its contemporary in the muster-roll of those who contributed to make up this volume; and it contains allusions to the events of every age, and the characteristics of every people known to History for thousands of years. *No book, therefore, ever had so many points of contact with the history and civilization of the world, and if not founded in truth, no book was ever so venerable.*

And yet this alone of all books has won to itself the name of *the Bible*. This is that book which has associated itself with the welfare of nations and individuals as no book besides has done in all the world through all time. This book is at this moment the stay of more earnest, upright hearts, the solace of more mourners, the inspiring cause of more heroic self-sacrifices for God and for humanity, than all other books put together. How is this to be accounted for? Were it from *man* only, could it possibly have gained a position and a power so disproportioned to its source; and do not its history and achievements, more even than the celestial firmament, *declare the glory of God and show forth his handiwork?*

As this Book embraces History, Poetry, Prophecy, Jurisprudence, Ethics, with manifold allusions to the physical and topographical state of different countries, and of the earth at large, it seems to invite the scrutiny of every class of scholars and philosophers. That scrutiny has been applied. It has been compared with profane history. It has been confronted with the story told by mouldering ruins, by half-defaced medals, by inscriptions on Pyramids and Catacombs, by the cemeteries of dead races, of plants and animals, by the researches of naturalists, and the discoveries and calculations of astronomers. It has been placed in the crucible of a criticism the most searching and often the most unfriendly, and what is the result? It has

been convicted of no material discrepancies or self-contradictions, of no important anachronisms in History, of no essential incongruity with the manners or customs of the nations it professes to notice, of no oppositions to science except that which is falsely so called. By all these trials it has gained the strongest confirmation. Though beset for eighteen hundred years by adversaries of the profoundest learning and sagacity, it has been steadily strengthening its hold upon the noblest minds and the most civilized nations of the earth. It has disdained, too, all the vulgar instruments of human aggrandizement, all the arts by which philosophical or political systems usually win their way to ascendancy. With uncompromising sternness it has arrayed itself on the side of weakness against unholy power, on the side of despised and down-trodden virtue; and with imperial authority it has claimed to supersede all the forms of Religion, Jewish or Pagan, which at the opening of the Christian Era had overspread the world and rooted themselves in the deepest foundations of prejudice and passion. At every step of its progress it has proclaimed that the weapons of its warfare were not carnal but spiritual. It has never been upheld by human power or become associated with schemes of earthly ambition that it did not suffer from the alliance. It has flourished with the greatest vigor in the midst of adversity and poverty; and in the face of superstition, war, licentiousness, and misguided philosophy, it has moved forward from heart to heart, and from nation to nation, till it is now the hope of the fairest portions of the earth, and the watchword of movements which seem likely to renovate even the far off-realms of China and Japan. *Is such a Book from Heaven or of Men?*

The contents of the Bible are remarkable; not less remarkable than its history. While, of all the works which have appeared among men, the Bible ALONE gives any rational account of man's degeneracy, indicates means by which he can be really raised out of its depth, and explains how man, the sinner, can be

counted just before God, the all-holy, it also throws vast light over the doctrines even of *Natural Religion*,—the Personality of God, as opposed to Pantheism; his Unity, as opposed to Polytheism and Dualism; his Holiness, as loathing sin; his Mercy and Long-suffering, as pitying the sinner. Where would these doctrines have been but for the Scriptures of the Old and New Testament? Now that these ideas have been developed, the mind can find traces of them in Nature, and clear indications of them in man; but the faltering convictions of the first minds in the Heathen world when, unaided, they dealt with these topics, show how much they needed a key to unlock the very treasures within their reach. And then the great *ETHICAL problems* which occupied the ancients,—with what ease, simplicity, and transcendent wisdom are they solved by the peasant of Galilee! St. Augustine notices, out of Varro, two hundred and eighty separate opinions entertained on the single subject of the *summum bonum*. Compare, with the best of them, the *opening of Christ's sermon on the mount*. Or compare all that the best and wisest of sages and law-givers laid down as *duty* with the few and grand central precepts, such as “the Golden Rule,” “the two commandments on which hang all the law and the prophets,” in which Jesus of Nazareth has summed up our obligations to God, to man, and to ourselves. LOVE is the one word which, according to this deep insight into the soul, comprehends the fulfilling of the Law and the end of the Gospel. *If this book were not of God*, could its authors, rude and unlettered as most of the writers of the New Testament were,—could they, if they had written *only as men*, have thus outstripped the brightest and most cultivated minds of other lands and of preceding times?

The manner of Scripture is as wonderful as its matter. It teaches by *example* as well as by precept. It shows us God, not so much *being* as *acting*. It embodies, also, in the Person of the Son of God, the most perfect *model of humanity*,—one who wins our affection by his human charities as much as He

commands our awe and veneration by his divine authority. A model it is, too, for which there was then no precedent in the past history of the world, and no adequate materials in the past conceptions of men. And as in Him, so everywhere the Bible exhibits the natural and supernatural worlds as interpenetrating. Man is presented as working on in all freedom, and frequently with all perverseness; and God is presented as working now *in* him to will and to do, now *through* him to overrule even his rebellions to the triumph of law, and again the wickedness alike of individuals and of nations to his own glory. From Genesis to Revelation God is in the foreground, working here by miracle, there by providence; and yet man remains always true to his own nature, and seems never bereft of his inherent liberty. Thus we see in mute prophecy and dim shadow the way preparing for that mystery of mysteries,—*God manifest in the flesh, the incorporation, as it were, of the finite and the infinite, of the human and the Divine*, prefiguring, also, how closely we may all become united by spiritual bonds with God in Christ; how our whole soul and body and spirit may be sanctified through the indwelling of the Spirit; how, retaining all our identity, we may still be gradually filled with the fulness of God, and thus be made ready for that final and glorious transfiguration, when, risen and renewed in the likeness of Christ, we shall be permitted to dwell forever with the Lord.

The *miraculous element in the Bible* is that which most strikingly vindicates its Divine authority; but it is by no means the only one. We have shown already that there is *antecedent probability in favor of miracles*,* and the evidence on which they rest may be regarded as impregnable. Their use is not merely to attest the Authority of Christ and of the prophets who went before and the apostles who followed after Him. They force upon us, in a way which nothing else could

* See Part I. Chap. IV. p. 114.

do, a sense of the *Divine Personality*. The more thoughtfully man looks on himself and on nature, the more he demands that God shall speak to him in assurance that there is that which is above all laws, even a Creator and a Father. And when God appears at the beginning of great eras, such as the Exodus from Egypt, or the Incarnation of Christ, we see in the prevailing condition of the human mind—in the stolid Pantheism or Materialism of the one period, in the desponding, despairing incertitude of the other*—all-sufficient REASONS why God should come forth from his hiding-place, demonstrating his intense Personality and his Lordship alike over Nature and over Man. We see reason, too, why, in achieving the work of Redemption, He should work these wonders through Him who sustained in his one person the Divine and the human natures, thus enabling us to behold the Godhead through the medium of human sympathies, and the manhood through the medium of Divine relations. So the awful gulf between man and God is bridged over; and we can approach the great Jehovah as our FATHER, who is touched with the feeling of our infirmities, and who lifts us out of the dust and the ruins of the fall, through brotherhood with one who is the only-begotten and dearly-beloved of the Father.

Again, the form adopted in the teaching of Scripture shows that its origin could not have been with men alone. Had it been left to them, they would have probably made it wholly narrative, or wholly didactic; wholly rhetorical and figurative, or wholly plain and prosaic. As it is, the Bible employs every form in which truth can be cast, except the *purely scientific*.

* Says Pliny, “What God is, if He be distinct from the world, no human understanding can know. It is a foolish fancy—proceeding from the helpless weakness of human nature, as well as from its pride—to suppose that such an infinite Spirit, be it what it may, can trouble itself with the miserable affairs of men. Man is full of wishes and desires, running into infinity, which can never be gratified; and his nature is a lie,—the greatest poverty united with the greatest pride.” —*Nat. Histor.*, iii. c. vii.; *Proem*, cvii.

tific. That is omitted because it would be unintelligible to a large part of mankind, and uninteresting to the imagination and affections of the residue; while it would supersede that task of evolving general principles and scientific arrangements out of masses of promiscuous and apparently heterogeneous truths, which is one of the chief and most useful employments of the reflective faculty, and which may as well be applied to a written Revelation as to that which is made through Nature and man. Now, by thus adopting, with one exception, *all* the various modes of presenting truth and duty, the Bible *meets the wants of universal humanity*. And, therefore, in part it is that, while other books are bounded in their influence by country, culture, or age, the Bible seems to be free of all lands, all ages, and all estates of men. Other writings have gained an imperial sway for some one reason only, —as the classics for beauty, histories for knowledge;—but here is a volume which is at once a classic, a history, a collection of sacred hymns, a code of universal morals. Dante has been styled the priest of the Catholicism of the Middle Ages. The Bible is the organ of the Catholicism of all times and all people. It gives meet utterance to the highest conceptions and desires of the enlightened, while it is at the same time joy and strength to the rude and unlettered. It is the book to which the child takes soonest and clings the closest. It is the book to which manhood in its prime unconsciously turns when it would gain the highest wisdom or the surest solace. Its appeals ring like a trumpet-summons on the heart and conscience of all who are alive to duty or to the soul's eternal weal; and when we reach the evening of our life, or stand on the verge of the eternal world, then it is that the still, small voice of this same word is all our stay. *Must not this word be more than human?* can it be in its power and fulness less than *Divine*?

Another characteristic of Scripture teaching marking it as *Divine* is its most discriminating recognition of the functions

proper to the *Objective* and the *Subjective*. All things, said the wise man, are double. There are realities, objects, truths, and duties without, there are corresponding faculties for perception, emotion, volition within. One philosophy, like that of Locke or Aristotle, overlooks too much the *subjective*; another, like that of Plato and the transcendental thinkers of our own day, neglects too much the *objective*. To maintain a proper relation between these two factors is important everywhere; but pre-eminently so in Ethics and Theology. In Religion, wherever all instruction from without is rejected or greatly undervalued, fanaticism the most wild and absurd, or unbelief the most licentious, invariably ensues. The human mind has inward powers and intuitions; but on every subject they involve but a capability which must be developed, and the development of which may be essentially and deplorably abnormal. To build, therefore, only on what is given us from within is to build on that which is most capricious and uncertain; and, on the other hand, to look abroad with no reference to the deep-seated moral and spiritual instincts of our nature, with no use of our own reasoning faculty, is to abnegate the highest prerogative we have from God.

Here, as everywhere, the Bible steers clear of Scylla and Charybdis. It offers itself as an *objective Revelation*, rendered necessary, in part, by the limited nature of our faculties, in part by the obscuration induced through sin, in part by the feebleness and fickleness of our powers. We feel, if we are not infatuated with self-complacency, that our minds *need* to rise above themselves; that to do so there must be a *fixed support*, higher than our intelligence has yet reached, and more stable than our wavering convictions can hope to be; an unerring criterion to which we can refer our conclusions, and an ever-advancing guide, which shall be to us as a pillar of cloud by day and a pillar of fire by night.

But the Bible does not overlook the functions which devolve on man as a moral and intelligent being. It addresses

itself, therefore, to his reason as well as to his faith, and it lays emphatic stress upon the greatly-neglected truth that our *subjective mental* and *moral condition* determines our capacity to appreciate the truths of Revelation; that, above all things, he must have an honest and sincere heart who would have the seed of truth and life imbedded in his soul and bringing forth fruit to perfection. The Bible recognizes all men as having a measure of this inherent capacity to apprehend the truth as it is in Christ, but as being better and better qualified for the task in proportion as they are humble, conscientious, and pure-minded.

The Bible is remarkable for the purpose at which it aims and the success with which it pursues it. It aims at nothing less than the moral regeneration of the whole world,—a design which never entered the imagination of the most aspiring statesman or the most large-hearted philanthropist of earlier days. It aims to achieve this sublime purpose by the simple proclamation of the love of God in Christ. And does not the history of Christianity demonstrate that this is no dream of enthusiasm? The triumphs she has won already prepare us to anticipate her ultimate victory over every existing and every conceivable foc. The Bible is not merely a conservator of good already compassed; nor is it merely an authoritative *summons* to come up higher: it is itself the well-spring, the exhaustless fountain, of the noblest truths and *impulses* that have been given to mankind. It has not only supplied new views of God, and put its ban on Polytheism, Panthesim, and Superstition; it has not only solved the awful problem of evil in its relation to man, and taught us the way of redemption through the Son of the Highest: it has invested every individual soul, for which Christ died, with a new and inconceivable dignity; it has developed in all, who have received its great truths in the love of them, a sense of responsibility which takes in both worlds; it has proclaimed the idea of a true brotherhood among all men in

Christ Jesus, and has thus laid the axe to the root of the tyranny with which man once lorded over woman, patrician over plebeian, noble over peasant, master over slave; it has developed the true function of the State as one of the agencies through which the individual mind is to be trained under God to full capacity and taste for all its duties and prerogatives, and as having right to exist and to rule only as it promotes to the uttermost in all its people this high culture.

These ideas, when first propounded, met with universal contempt or execration. Slowly but surely, however, they have spread like leaven through bodies politic and social, charging mind after mind with their sacred influence, and gradually achieving that amelioration which places us this day high above the highest condition ever attained under Pagan or Mohammedan sway. And thus are mankind to be always taught of God. Thus have they been learning for six thousand years,—from the Patriarchal to the Mosaic, from the Mosaic to the Christian, stage. In the infancy or childhood of the world, it was the absolute regimen of parents; in its hot and fiery youth, it was the fixed and well-defined dominion of law as prescribed in the Old Testament; and in its riper and more thoughtful manhood, it is the gospel of the grace of God. First there is outward truth to make one wise, then there is subjective preparation to receive that truth. There is glory without, hidden from the proud and self-complacent, but revealed to those who in meekness are babes. There are laws for earlier stages, and there are laws again which shall be fully comprehended in all their applications and cordially obeyed only when society, through a larger experience and a deeper moral sense, shall come to see their wisdom, and to own their sanctity and binding force.

What an instrument have we here for regenerating universal humanity! Ours is not a religion for a favored family or a preferred people. We are put in trust of the gospel, and we hold it for mankind,—for the distant, the benighted, the

down-trodden, the afflicted. Nations in their loftiest successes, in their purest forms of civilization, are but travelling towards the *ideal* presented in Scripture; and as new phases of society appear, that Scripture will be found adapted to each so far as it may be legitimate, and be calculated to advance each to new glory and perfection. If this book be of God, then it was written with foresight of all coming conditions of the world, and it will be found to have for every one of them appropriate instructions and influences. And it has. For the fearful struggles of our own time it has the only effectual guide; for its struggles between capital and labor; between liberty and order; between Church authority and private judgment; between spirituality and formalism; between asceticism and sensuality; between fatalism and freedom; between mysticism and dogmatism; between belief and unbelief.

But if the Bible be such a *Regenerator* for nations and for the race, it must have capabilities equally great for the culture and improvement of the *individual*. And what could we desire in a book to rouse our dormant faculties, or to invigorate and refine them, that we may not find here? Holy Scripture comprehendeth History and Prophecy, Law and Ethics, the Philosophy of Life that now is, the Philosophy of Life that is to come. At one time it clotheth its teachings in strains of the sublimest or tenderest poetry, at another in narratives, as beautiful and touching for their simplicity as they are unrivalled in dignity. It has reasoning for the logical understanding; it has pictures for the discursive imagination; it has heart-searching appeals for the intuitive powers of the soul. There is no duty omitted; there is no grace or enjoyment undervalued. It provides a sphere for every faculty, and even for every temperament and disposition. This many-toned voice uses now the logic of a Paul, and now the ethics of a James; here the boldness and fervor of a Peter, and there the gentleness and sublimity of a John. With one it discourses of the awful guilt and curse of sin, and points us to

the only way of escape; while with another it expatiates on the unutterable love of God, and the attractions of the Cross of Christ. The Bible is no formal, lifeless system of propositions and inferences and precepts. It is as rich in the variety and vivacity of its methods as it is in the overflowing abundance of its materials. While it draws some to Religion through the ideal, and some through the real and demonstrable, it allures others by means of the affections and sensibilities, and others it overawes, as a son of thunder, by its appeals to conscience and the dread of an hereafter.

And how is it if we look to the *culture of the intellect* merely? How vast is the field which the Bible opens to our inquiries? What rich results may we not win in almost any conceivable line of research? What discipline does not the proper study of it provide for our reason and our faith, for patience and humility, for fortitude and moderation? And in respect to those momentous questions, which pertain to God and the soul's destiny, there is light enough for every humble, robust mind, there is darkness enough for every proud and self-confiding one. To attain to perfect and all-embracing knowledge belongs not to us, who are still in the twilight of our beings, and who are called to work our way, through patient and ennobling labor, to that state where we can see even as we are seen, and know even as we are known. That way will open gradually, but surely, before all who go forward trustfully and manfully with the Bible as their guide. They shall have no infallible certainty, but they shall have unshaken and soul-satisfying confidence. To the question of questions, "What shall I do to be saved?" they shall find an answer on which they can stay themselves in perfect peace. Their assurance will be the gift of no ghostly confessor, it will be the offspring of no sudden and indefinable impression or inspiration. It will be faith, well grounded and settled, an anchor to the soul. It will have the witness within that we love and strive to serve God; and it will have the witness

without that they who do Christ's will shall know of his doctrine; that the Holy Spirit will guide the meek in judgment, and instruct them in God's way, and that he who cometh, with a faithful and penitent heart, in Christ's name, shall in nowise be cast out.

While in this state of warfare, the Christian must expect to be assailed through his understanding as well as through his heart. He may never hope to be exalted therefore here above all necessity of seeking more truth, nor above the duty of guarding against the beguilements of his own heart. The divisions which rend Christendom are not to be ascribed to the insufficiency of Scripture. They are to be ascribed to the insufficiency of man's fallen but self-confident mind; its insufficiency to discuss without passion, and to decide without prejudice. When men rise superior to selfish pride and interest; when they bring to the study of Scripture a devout and teachable spirit; when they gladly avail themselves of all proper help, and look with becoming deference to the judgments of the wise and good; when they seek truth first of all as a guide in action, not as a weapon for controversy; when they apply to its contemplation both their intellectual and their moral powers, their reason, their conscience, their affections, and an obedient will, they shall not be left in such case greatly to err. *God, says Pascal, willing to be revealed to those who seek Him with their whole heart, and hidden from those who as cordially fly from Him, has so regulated the means of knowing Him as to give indications of Himself, which are plain to those who seek Him, and shrouded from those who seek Him not.*

HERE then we rest; not fearing for our Creed
The worst that human reasoning can achieve
To unsettle or perplex it: yet with pain
Acknowledging, and grievous self-reproach,
That, tho' immovably convinced, we want

Zeal, and the virtue to exist by faith
As soldiers live by courage; as by strength
Of heart, the Sailor fights with roaring seas.
Alas! the endowment of immortal power
Is matched unequally with custom, time,
And domineering faculties of sense
In *all*; in most with superadded foes,
Idle temptations, open vanities
Of dissipation; countless, still-renewed,
Ephemeral offspring of the unblushing world;
And, in the private regions of the mind,
Ill-governed passions, ranklings of despite,
Immoderate wishes, pining discontent,
Distress and care. What, then, remains?—To seek
Those helps for his occasions ever near
Who lacks not will to use them; vows, renewed
On the first motion of a holy thought;
Vigils of contemplation; praise; and prayer,—
A stream, which, from the fountain of the heart
Issuing, however feebly, nowhere flows
Without access of unexpected strength.
But, above all, the victory is most sure
For him, who, seeking faith by virtue, strives
To yield entire submission to the law
Of conscience;—conscience reverenced and obeyed,
As God's most intimate presence in the soul,
And his most perfect image in the world.
—Endeavor thus to live; these rules regard;
These helps solicit; and a steadfast seat
Shall then be yours among the happy few
Who dwell on earth, yet breathe empyreal air,
Sons of the morning. For your noble Part,
Ere disencumbered of her mortal chains,
Doubt shall be quelled and trouble chased away;
With only such degree of sadness left
As may support longings of pure desire;
And strengthen love, rejoicing secretly
In the sublime attractions of the *Grave*.

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